DOCUMENT RESUME

ED 047 335 CG 006 223

| | |
|---|---|
| AUTHOR | Youst, David B. |
| TITLE | A Comprehensive Micro-Image File for Occupational Information. Final Report. |
| INSTITUTION | Rochester City School District, N.Y. |
| SPONS AGENCY | Eastman Kodak Co., Rochester, N.Y.; New York State Education Dept., Albany. Bureau of Guidance.; New York State Employment Service, Albany. |
| PUB DATE | 30 Jun 70 |
| NOTE | 171p. |
| AVAILABLE FROM | David B. Youst, Rochester Career Guidance Project, City School District, 13 South Fitzhugh Street, Rochester, New York 14614 (No price is quoted) |
| EDRS PRICE | EDRS Price MF-$0.65 HC-$6.58 |
| DESCRIPTORS | Audiovisual Aids, *Career Choice, *Career Planning, Counseling, *Guidance Programs, *Guidance Services, *Information Dissemination, Microfiche, *Occupational Guidance, Occupational Information, Personal Interests, Secondary Schools, Vocational Counseling, Vocational Development |

ABSTRACT

The report describes the activities which comprised the design, implementation and evaluation of a Micro-Image System for occupational information, which is one component of a comprehensive career guidance program. The location of the film equipment in the Frederick Douglass Junior High in Rochester, New York is discussed in terms of the amount of use it received by students. A data gathering phase, during which students using the equipment filled out a questionnaire, is elaborated in detail and the results presented. The rationale underlying the Rochester Career Guidance Project's development of the Micro-Image File is explained and actual steps in the development are enumerated. Appendices include: (1) further theoretical and practical career guidance considerations, (2) a description of a Career Guidance Laboratory where students participate in simulated work situations, and (3) actual career guidance materials focused on the work of X-ray technologists. (TL)

ED047335

# A COMPREHENSIVE MICRO-IMAGE FILE FOR OCCUPATIONAL INFORMATION

A Final Report

by

David B. Youst

Rochester Career Guidance Project

City School District

13 S. Fitzhugh Street

Rochester, New York 14614

June 30, 1970

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

The activities described in this report were supported by the New York State Education Department, Bureau of Guidance; The Rochester City School District; the New York State Employment Service, and the Eastman Kodak Company. The constant cooperation of these agencies was responsible for providing and maintaining the climate in which the following activities could be carried out.

The New York State Education Department, Bureau of Guidance, under Grant #RA 70-20; NDEA V-A Project provided $33,970. for use between February and June 1970. This grant was provided to develop certain project concepts to the field testing (pilot) and evaluation stages.

CG 006 223

TABLE OF CONTENTS


| | Page |
|---|---|
| Introduction ..... | 1 |
| The Implementation and Evaluation of a Partial Micro-Image System for Occupational Information ... | 1 |
| Results from Questionnaire ..... | 5 |
| Results of Follow-Up Interview ..... | 8 |
| Interviews With Counselors ..... | 9 |
| Appendix A, "Eavesdropping" ..... | |
| Appendix B, Proposed Microfiche Outline ..... | |
| Appendix C, Rochester Career Guidance Project Overview ..... | 1-9 |
| Appendix D, Comprehensive Career Information Micro-Image File ..... | 1-13 |
| Appendix E, Career Exploratory Experiences ..... | 1-12 |
| Appendix F, Individual Career Guidance KIP-II ..... | 1-7 |
| Appendix G, Life Career Studies for X-Ray Technologist ..... | 1-20 |
| Appendix H, Career Week Project ..... | |

Late in February 1970 funds in the amount of $33,970. were made available to the Rochester Career Guidance Project by the Bureau of Guidance, New York State Education Department. The activities described in this report were carried out between March 1 and July 30, 1970. Three major activities were:

1. The implementation and evaluation of a partial Micro-Image system at Douglass Junior High School, Rochester, New York.

2. The completion of content for a comprehensive Micro-Image (microfiche) File for occupational information.

3. The production of five slide audio units for in-service counselor use.

THE IMPLEMENTATION AND EVALUATION OF A PARTIAL MICRO-IMAGE SYSTEM FOR OCCUPATIONAL INFORMATION

Work completed previously on the Career Guidance Project, (Burnham, Johnson, and Youst) provided the foundation for systematically gathering career material together on the basis of occupational titles, and then microfilming these materials for independent and individualized use by students. Commercially published briefs, materials from the Occupational Outlook Handbook, Encyclopedia of Careers and the Dictionary of Occupational Titles, were gathered together to form a system with 623 job titles. In January of 1970 this was microfilmed in two forms, Dekastrip and

Microfiche. As part of the present project, a guidance aide and a teacher on special assignment were hired to develop the best possible implementation of the Micro-Image File, and to gather data on student-counselor-staff acceptance of this aspect of the Project.

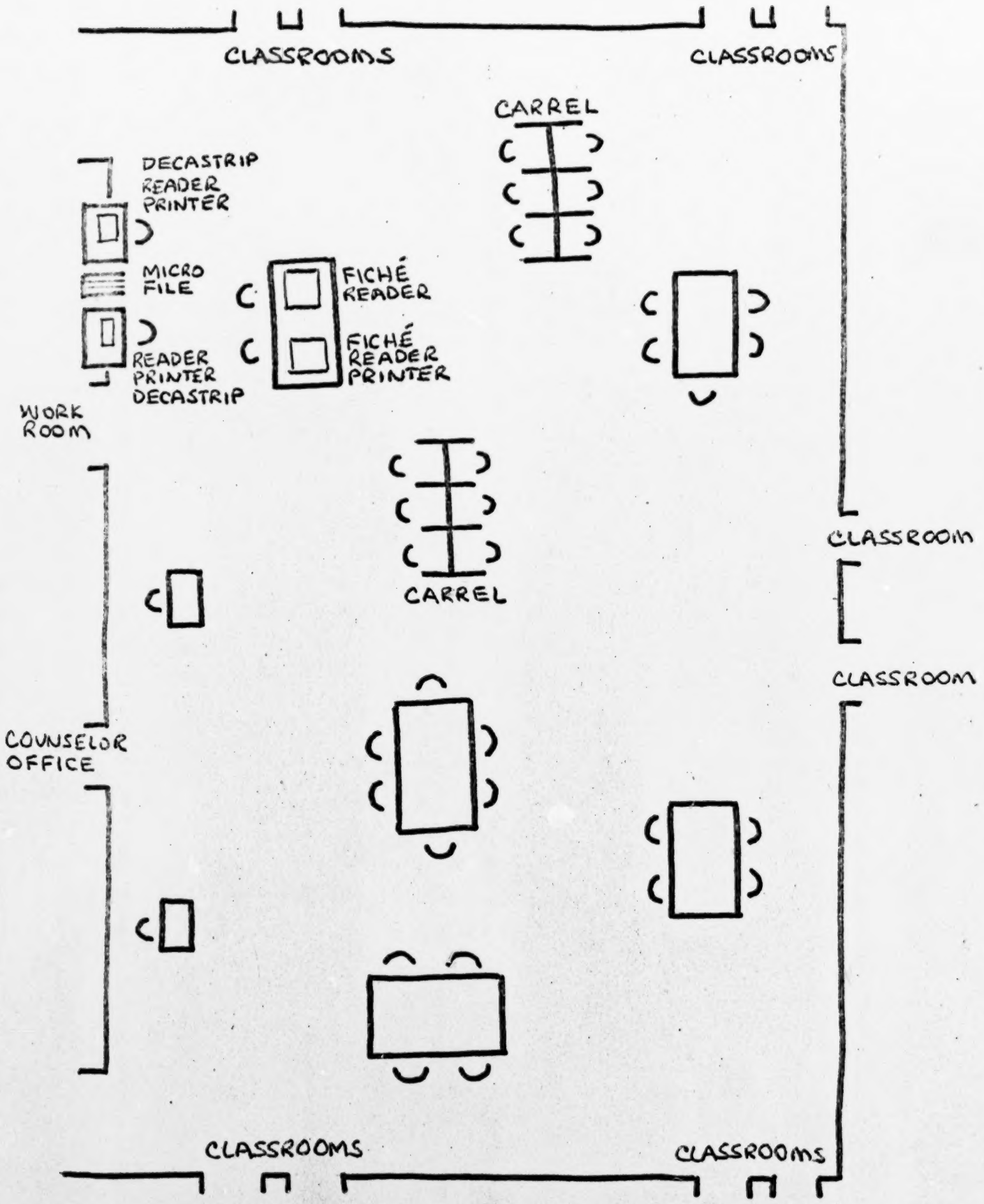
Frederick Douglass Junior High School is now two years old, and located at 940 Fernwood Park in Rochester, New York. It is the only separate junior high school serving seventh and eighth graders in a district with 45,000 pupils, nine secondary schools and 44 elementary schools. The student population at the school is fairly representative of the student population in the city; approximately 40% of the students are non-white, and some students from the lowest and highest socio-economic areas of the city attend.

The film equipment was located in one cluster of the building (one of four) serving eighth grade students. The physical arrangements at Douglass are unique enough to make it dangerous to apply conclusions to more traditionally arranged schools. In the area where the file was established, approximately ten classrooms surround an information center. Each time classes change, students pass through this information center. They, therefore, have constant access to human resources such as a guidance counselor, library aides, and the Project guidance aide,

as well as the equipment. (See figure 1)

Students were not encouraged to use the machine, and only a very brief mention was made of the coming equipment in each homeroom surrounding the file equipment. Data was gathered on each student user between the dates March 4, 1970 and May 15, 1970. Each student user filled out one page of a questionnaire before actually looking at materials in the file. After finishing each session, he filled out the last two pages of his questionnaire. A "gadget affect" was present for approximately seven school days, but after this period of time staff members were very pleasantly surprised by the seriousness with which junior high students used the resource. Initially two Dekastrip reader-printers were provided on loan by the Eastman Kodak Company and on May 1st two other units of equipment were added; one Microfiche reader-printer and one Microfiche reader. At our request, the Eastman Kodak Company provided print-out paper free of charge to the students. This meant that we did not need to set limits on the number of copies which students could take from the file, (except, be reasonable). Problems did develop with student attitudes regarding the Microfiche reader. It was used rarely, and preferred by no one.

Figure 1




FLOORPLAN D 311 IMRA DOUGLAS JR. H.
ROCHESTER CAREER GUIDANCE PROJECT

We initially used Dekastrip equipment because we felt it would be the simplest for students to use. As the file became established, it was once again clear to us that we had underestimated student capabilities for handling our equipment. Not only could students handle the Dekastrip equipment without any difficulty, they could also handle Microfiche with only a minimum of instruction. The Microfiche reader-printer was particularly annoying, because it required a student to keep one hand up on top of the machine to move from one frame to the next. In general, students did not complain about this inconvenience and did not seem to have difficulties.

Another microfiche reader-printer (3M Executive I) was used during one very warm week in June (after experimental period). This machine does not require an awkward hand position for reading, but is somewhat more difficult to use when making a print.

During the data gathering phase, one major event occurred within the school which interferred with true independent access to the Micro-Image resource. Apparently too many students were abusing the information resources (not the Micro-Image File) and the school wished to tighten up control of student movement from classrooms to information centers. Beginning on April 16, each student was

required to have a pass to go from his classroom to the information center. This change in the school policy did not diminish the student use of the file, but did result in students saying that they were referred by counselors, because they had to get a pass from a counselor or teacher.

RESULTS FROM QUESTIONNAIRE

The Micro-Image file was used 615 times between March 4 and May 15, 1970. Most students (92%) did make copies of some materials included in the file. Contrary to our initial expectations, most of the file users were boys, (353 boys, 262 girls). Until other guidance counselors began sending students from their cluster areas in large numbers, the largest category of users was returning self-referrals. In other words, once a student used the file, he often wished to come back and, in fact, during one limited period of time when 35 students used the file, 30 had been to the equipment before, (17 of the 35 were there for their third or more visit.) For the total group, boys were much more likely to return than girls, the ratio being greater than 2:1.

Because students who returned filled out questionnaires each time they used the file, it is difficult to assess the number of different users of the system. 334 of the questionnaires indicated that the student was using the equipment for the first time, but since the equipment had

been partially set up before the experimental period, some students probably checked 2nd or 3rd visit, when the first "complete" visit would be more appropriate. At least 54% of the file users were making their first visit.

Approximately one-half of the students spent longer than 25 minutes, and almost everyone longer than 15 minutes. First time users tended to spend longer. 413 of the users were in eighth grade; 202 in seventh.

There seemed to be some differences between self-referred students and those who reported a referral by others. The self-referred students tended to be less enthusiastic on the questionnaire, although they generated the most penetrating questions relative to career development. They may be the most mature students. Of 146 self-referred students, 119 had used the file previously.

Faculty acceptance of student use of the Micro-Image file was quite good; however, Project staff did not have the opportunity to adequately explain to teachers how the resource materials might be best used from their instructional bases. Future work should include grouping the job titles in the file according to subject matter content, and providing teachers with these lists, so they may incorporate this information into their classroom content. However, 66

students (10%) were referred by classroom teachers.

During the experimental period (615 users), the students looked at 249 different jobs, (623 were available). Since the only means by which students could gain access to the file was by using an alphabetical index, a frequency count was made of those jobs looked at in the first 100, second 100, jobs etc. 65% of the jobs looked at were in the first 200 listed in the alphabetical index. Clearly, additional techniques are needed to help students enter the system.

As expected, certain jobs were looked at many times. Stewardess and model were most popular for the girls, while automobile mechanic led the boys' explorations. Further analysis will be made of the titles chosen by the various subgroups. (Pilot was looked at much more often by seventh graders).

Two questions dealt with the technical aspects of using the file:

> "Once you got used to the microfilm machine, did it work o.k. for you?
>
> 90% answered Yes and
>
> 10% No. From those who answered no, one problem was listed in almost all cases - Ran out of paper!

Another question asked,

> "Could you read the materials without difficulty"?

80% answered Yes, and an additional 13% said "Yes, but I could not clearly see everything I wanted to." The remaining students said "No, there were things I could not make out."

RESULTS OF FOLLOW-UP INTERVIEW

Follow-up interviews were held with 249 students during the first week of June, 1970. Homerooms were randomly selected from:

8th grades near the file (3 of 10)
8th grades not near the file (3 of 10)
7th grades (6 of 25)

Of 146 eighth graders polled, 118 said they had used the file.

Other results indicated that of the students who made print-out copies of career information, 75% showed a parent or friend. Even more remarkably, virtually all of the students still had a print-out.

Approximately 40% of the students indicated that after using the file, they engaged in some additional exploratory activity. About 1/3 of the users remembered wanting to know something about the job that was not in the file. In general, though, they could not remember exactly what it was. (They may have been just generally dissatisfied with the content of the Occupational briefs.)

INTERVIEWS WITH COUNSELORS

Early in March, the five counselors at Douglass were asked, "What do you think of the microfilm project"? In early June they were again interviewed. Some of their statements follow:

Counselor for 7th and 8th grade students -

"The fact that they can get materials which they can hold in their hands and take back later is very good. I've found that the prints are the most rewarding part of the project. A lot of students have said to me that they were reading the "prints" last night or showing them to friends and parents. This kind of follow-up is a tremendous boon to the guidance counselor because it immediately involves the parents."

Counselor for 8th grade students -

"...I do think that the use of the machines has actually built up students' interest and enthusiasm for career exploration. Many of the students have pointed out that at first they thought they were interested in one specific job. After using the micro-image machine they found that they wanted to investigate another area."

Counselor for 7th grade students -

"...the reading level of the information is too high for 7th grade students. The size of the print is too small, and it is too difficult to read. There should be more

pictures and less printed material. My main objection is that the information looks too much like a textbook. This is not good for a 7th grade student who reads at a third grade level. It is interesting to note that some students ask to return to use the machines immediately, while others wait a few weeks before they make a return visit."

Counselor for 7th grade students -

"I sent about 175 students up to use the project. Many of these students came to see me after using the machines. 20 or more of the pupils were completely fascinated by the project and asked me repeatedly for permission to use the machines again. The machines do seem to motivate some students to explore careers."

Counselor for 8th grade students -

"...almost every day students are asking me if they may go back to use the microfilm machines. It would be a big help if one of these machines were placed in each IMRA so that students wouldn't have to ask for a pass in order to use the machines. This would automatically expose students to the project every day and give them more opportunities to use the machines. Having a machine in each IMRA would be "fantastic" as far as I am concerned."

The guidance aide, who was hired to help students use the microfilm equipment, was unusual in many respects. She

had served as P.T.A. President at the school; had a son currently enrolled in the eighth grade. In addition, she had served as a two-hour a day aide in the cafeteria during lunch time. Apparently some students identified her, initially, as a controlling person, though no evidence was gathered directly which indicated that this perception was a handicap in her helping role as a guidance aide. The aide, being non-white, was helpful in clearing up some misperceptions which some non-white students had regarding who could use the file. Some black seventh graders thought that other students were paying for the print-out copies and that you had to have money to use the file. The guidance aide, was able to correct this misperception within a short period of time and then encouraged some of these students, who felt "unwelcome," to use this resource.

Other data was gathered and called "Eavesdropping." The guidance aide would systematically listen to the kinds of questions which students asked when they initially used the equipment. Lists of these questions have been made and appear in the Appendix.

In summary, the implementation and evaluation of the partially completed Micro-Image File at Frederick Douglass Junior High School seems to have been extremely successful.

Clearly, urban junior high school students are eager to gain access independently to career information which they choose to see. The large number of students, who used the file in the brief period of time, seems to indicate that similar prior research such as Project VOGUE in Nassau and Suffolk County may have suffered from inadequate attention to the implementation stages. We were especially pleased to gain, through our concern with implementation, direct contact with students, administrators, counselors. Teachers, inmany ways, were peripheral agents who could choose to use the file in conjunction with their work; work with students to use the resource, or they could choose to ignore its existence. However, "let us make one thing perfectly clear," it is very difficult to ignore an enthusiastic seventh or eighth grader!

NEW CONTENT for MICRO-IMAGE (MICROFICHE) FILE

The problems with existing, generally commercially published career information, have been identified in previous work carried out by the Career Guidance Project staff:

1. Materials are not often as graphic or as visually oriented as they may be.

2. Not enough care is given to readability and vocabulary selection.

3. Important data has never been systematically gathered. One example would be:

    . High school courses appropriate for one planning to enter a particular field, etc.

4. Few information files have been developed with thought given to the primary user, e.g. if the primary user is to be a student; sex, grade level, motivational state, and previous experience with the information source are critical variables in determining what resources should be first made available to him.

5. Seldom is the gap crossed between the high school, work , and the world of work.

It would seem that some people spend years of their lives drifting, mostly aimlessly, letting time and chance provide the major input for their individual guidance systems.

WHAT WAS NEEDED

Among the many things needed to help young people in the process of purposely charting their own life-style and career alternatives is an adequate information source. The Micro-Image File, as developed on the Rochester Career Guidance Project is just one small segment of a total information system. The total on-demand system should provide for modularly developed audio-visual materials which incorporate role models of all races and sexes, etc. Beyond this, automated means of retrieving vast amounts of information will clearly be necessary. Therefore, the concept of a total information system should not be limited in our thinking to those technological elements with which we now have some experience. While printed materials have been constantly criticized in the Rochester work, it seems possible that the greatest amount of data, which will be available for some time in the future, will continue to be in printed form. With this in mind, the Career Guidance Project staff set about to modify its first efforts with the Comprehensive Micro-Image File for career information. Our first thought was to build a file around occupational briefs and material available in the public domain. We recognized the need to provide information, which some guidance counselors would

routinely provide, such as most appropriate high school courses related to a particular job; alternate paths to follow after high school to gain entrance to a particular career, etc. We recognized that for a teacher to have adequate resources relating to his subject field, and for a student to have increased access to sources of career fiction, games, and stimulation activities, that some more research was in order. In addition, we discovered that a great deal of information available through employment resources could be systematically categorized and related to job titles. Types of employers, related jobs, job lattices (ladders), and other kinds of employment information, could be researched and presented for student and teacher use. The bonus in this work with New York State Employment Service was the recognition that some material contained in the Dictionary of Occupational Titles could be converted from highly technical descriptions to less precise, but much clearer, printed form.

FORMAT CHANGE

Our first intention was to gather in one place, and then film sequentially, four basic categories of information; published occupational briefs, additional education information, additional sources of information, and additional job

information. During the process of trying to establish the format, it became evident that the microfiche matrix offered advantages which had not been explored thus far in Project activities. With the Dekastrip and roll-forms of microfilm, pages are filmed sequentially much as if they were stapled together (booklike), one after the other. It is possible to skip ahead in the material when filmed this way, but every photographed frame needs to be passed over in the process. With microfiche this is not so. From one frame in the middle of the fiche, it is just as easy to go up one frame, or down one frame, as it is to continue reading in the same row.

In the newly completed microfiche file, the full capabilities of this branching process have not been exploited. However, one step has been taken. The material is presented in four basic lines or rows with occasional "loops" designed to add greater depth or clarity to a particular concept. If a person chooses to loop, he is referred back again into the major row so that no materials on the major row should be overlooked. The other innovation in the use of microfiche, to solve career guidance information problems, was the concept of a double index, as found in the first row (A) and first column (1) of the microfiche. Attention is paid to the first-time user of the file, who probably has had very little

exploratory experience behind him. In effect, the twelve frames of Row A present an overview of all the material in the file by phrasing questions, for which the user may want answers. Each frame asks the question, tells the user where that kind of information can be found within the file, and then refers him onward in frame A to get an extensive overview. Column 1 is also an index, but this index recognizes that many users may have had experience with the file, or may want quite specific bits of information. They may have a good idea of where to find it in the file. It was felt, that once understood, this format could be used most effectively to present most printed information needed by public school students.

Each microfiche has the title on frame number 1 of the top row (A). The second frame (A2) contains directions for using the file. After reading the directions you might decide to proceed directly to the briefs which are in Row B; or to the third step in the horizontal index, which provides a job description. A-4 tells what the briefs are. Again, at this point you might decide to read the briefs or to proceed to A5, A6, and A7 which deal with educational materials; A-5 relates to high school courses; A-6 to education after high school - college, apprenticeship, on-the-job training, etc.; and A-7 deals with such things as clubs and volunteer work that relate to the job. The eighth through the

eleventh frames on row A deal with sources of employment, other jobs that are related to this particular job, ladders, and interests and worker characteristics related to the job, and the final frame on row A of the horizontal index describes sources of information, such as career fiction and career biography.

A user might want to skip the briefs and go directly to the educational requirements for that job. He would then go directly to Row C. C-2 gives an overview of the educational material in the file; C-3 describes general high school requirements, (if this job requires a college education, he might wish to look at D-3 for this information then back to C-4 and 5; C-4 identifies high school program possibilities; C-5 shows alternate ways to prepare for the job. Again, he might "loop" to D-5 and then D-6 for some post-high school courses, before going on to C-6 and 7 which would give him other types of information, such as other areas to look into or things to do.

Thus, the same microfiche can be used by a person the first time he looks into a job where he can be given a step-by-step direction, and also the more experienced person who can go directly to the type of information that he wants. The pilot version will be in operation at fourteen "stations" in Rochester during the 1970-71 school year. All of this material was pulled together in only two

months by fourteen people working on a crash program about twenty hours a week, in addition to their regular jobs. Six of these were employment personnel from the New York State Employment Service; six were guidance counselors from our public school system; and two were librarians, also from our public schools.

TIME, GOALS, QUALITY

In retrospect, the problems tackled in the Spring of 1970 by the Rochester Career Guidance Project staff appear insurmountable. That so much has been accomplished in such a short period of time is a tribute not only to the personnel; but also to the clarity of the basic thinking developed in previous work on the Project. Without such a framework, even the extensive efforts put forth would not have produced such results.

A host of decisions had to be made early in the project development, and many of these decisions were of the nature of limiting what it was possible to attain during time limits of the project. A decision was made to use Cossati format (Microfiche), sixty images in a five by twelve (matrix). It was thought that 60 pages would allow the presentation of sufficient data and result in a system completely compatible with most library information systems, and particularly with the ERIC Information System. Equipment established in this

fashion would then serve as a ready counselor professional library, a teacher professional library utilizing all of the ERIC Centers at a minimum expense, library annotation systems and of course, most important, the Career Guidance Micro-Image File.

Each page, or frame, needed to have its content specified and its format graphically produced. In addition to deciding the way in which materials should appear on the page, there were additional problems generated because of the production process. The basic procedure developed as follows: content and format were established, a final copy was made in dark black type or print, multiple copies of the form were made on offset press at the same time that professionals were gathering the information necessary to complete the form for each particular job title. After final checking of the content, a secretary then typed onto the final offset form the content developed by the part-time professionals. Materials assembled from the typist, of course, needed to be assembled in final form and subsequently checked once more by a professional before they would be actually microfilm-camera ready.

The enormity of the operation can perhaps be described in numerical terms. Our goal is 517 job titles - each having sixty pages. This means that 31,020 pages need to

be assembled in the precise order in which they would be photographed. Approximately one-half of these pages are in some way standardized so that additional information did not need to be gathered for each career. Even so, the assembly alone for so many pages is a formidable obstacle. Following, will be found a sample copy of all the materials for one occupation.

It should be kept in mind that none of these frames has been professionally reviewed or subject to field test experience with students. For the work produced so quickly in the Spring of 1970 to have a maximum impact, provisions must be made for the extensive revision of the materials in the file, and for the development of data which should also appear in a completed file. This much is clearly possible.

# Appendix A

**CITY SCHOOL DISTRICT**
**13 FITZHUGH STREET SOUTH**
**ROCHESTER, NEW YORK 14614**
**325-4560**

The Rochester Career Guidance Micro-Image Project

Frederick Douglass Junior High School

By Carol Kaman - March 20, 1970

"Eavesdropping at Douglass Junior High School"

This is a non-scientific report which might be helpful in finding out what are the questions that the students are asking while using the machine.

"How much am I going to make in this job? After all I'm not going to work for $3,000 bucks a year."

"I'd like to hear from an airline pilot about his job. He could really tell me what the job is like."

"What are the best parts of the job - - - the worst. Do people who work in this field like their jobs?"

"Will I be looked down upon by other workers? Who is going to look up to me? Will I be ashamed of my work?"

"How many hours a week do I have to work?"

"My father works two jobs and my mother works one. I know how much it costs to keep a family going. Earnings and hours - they are what matter to me."

"Where do I do this work? I don't want to be stuck in some dump."

"How do I find out what courses I need to get the job?"

"What are the job duties - is it an awful lot of work?"

"If I go through all the training, how can I be sure to get the job."

Eavesdropping at Douglass Junior High School

May 11, 1970

by

Carol Kaman

"The information in the file was better than most kinds of career information that I have used. Frankly, I'd rather go to talk to a person who is working on the job. I think that I would learn more by doing it that way. It would be much more interesting for me to be able to ask questions and get answers from someone directly involved in the job. Machines are too impersonal for me."

"I am from Batavia and we certainly don't have anything like this machine out there. It seems like this is a great way for students to find out about jobs. I looked at several occupations and found out about earnings and how much education I would need in order to get the job. Thanks for letting me use the machine." *

"The machine is interesting and good. It shows students how to find out about different jobs. I'm glad that we are allowed to take copies. I do like the fact that the information seems very up-to-date."

"The machine gives you a chance to read up on jobs and take your time doing it. Nobody made me rush to get finished. When I go to my Guidance Counselor he is always in a rush and I can't just sit down and find out everything that I'd like to know."

*Douglass Junior High is having an exchange of students with Batavia this week.

May 27, 1970

Eavesdropping at Douglass Junior High

by

Carol Kaman

"How can I find a job. I don't want to be a saleslady and I don't want to be a typist, but I do want to work in a store. What kind of jobs are available in stores"?

I think it would be very valuable if we had other forms of indices to be used with the Micro-Image Project. The above conversation has taken place in many forms here at Douglass. Often a student will have no idea of the name of the occupation that he is interested in surveying. The paraprofessionals should be given some training in job titles and what they mean.

It would be most helpful to have occupations indexed by personality traits, by educational requirements, by location of the job (e.g. these jobs appear in stores, in the government, in schools, etc.), and I can see where an index by earning power might be helpful to some. We also need an index prepared to show relationships between similar jobs. The addition of various types of indices would be extremely useful in this Project.

"What kind of a doctor treats ladies and not men." A student asked this question today. The answer is obvious to some, but my aide was unaware of the answer. I do think training for the paraprofessionals should be included in any future extension of the Project.

Evaluation of 3M Microfiche machine in its first day of operation at Douglass Junior High school.

by

Carol Kaman

Eavesdropping at Douglass - June 5

"This machine is easier to use than the other microfiche machine. The handle on the machine is right in front of you, and you don't have to put your hand up in the air. The index card is much easier to use. The only thing that I don't like is pulling out the handle to make a print. It's easier to just "push a button."

"The new machine makes much better copies. They are very clear and distinct and they aren't wet."

"The 3M machine is a lot easier to read. The information is much clearer and can be read very comfortably."

# Appendix B

B5 - B12

Copyrighted Material
Removed

[ SRA Occupational Briefs

# DATA PROCESSING MACHINE OPERATOR

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | TITLE | DIRECTIONS OR → | JOB DESCR. → | BRIEFS ARE... → | ED INDEX → | ED INDEX → | ED INDEX → | ADDIT. JOB INDEX | ADDIT. JOB INDEX | ADDIT. JOB INDEX | ADDIT. JOB INDEX | INDEX · OTHER SOURCES | A |
| B | BRIEFS · | ← BRIEF | #1 → | | | ← OOH | → | | ← BRIEF | #2 → | | □ | B |
| C | EDUC. · | ED. OVER-VIEW → | ED. GEN. HS → | ED. SPEC H.S. → | ED + JOB ALT ROUTES IN → | ED. REL. CLUBS → | ED. THINGS TO DO ← | DOT INT II → | DOT INT III → | DOT INT IV · | | | C |
| D | OTHER SOURCES · | BIBL. · | ED H.S. if COLL. PREP. | | ED. POST H.S. SOME SCHOOLS → | ED POST H.S. SAMPLE PROG. | | DOT INT. I | DOT TEMP 1 → | DOT TEMP 2 → | DOT TEMP 3 → | DOT TEMP 4 · | D |
| E | OTHER JOB DATA · | BIBL. → | BIBL → □ | JOB OVER-VIEW → | SOURCES OF JOBS → | RELATED JOBS → | MOBILITY TO JOBS → | DOT INTEREST | DOT TEMPER | WORK CONDITIONS PHYS. DEMANDS → | JOB DEMANDS & LOCATIONS → | USER CHECK LIST SUMMARY □ | E |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |

PROPOSED MICROFICHE OUTLINE · D. YOUST MAY, 1970

ROW A
FRAME 2

# DIRECTIONS FOR USING THIS FILE

MATERIALS ON THIS OCCUPATION ARE ORGANIZED AS FOLLOWS:


OCCUPATIONAL BRIEFS____ begins on B 2

EDUCATIONAL INFORMATION____ begins on C 2

OTHER SOURCES OF INFORMATION___ on D 2

ADDITIONAL JOB INFORMATION___ begins on E 4


YOU MAY GO TO ONE OF THE PAGES LISTED ABOVE, OR IF YOU WANT TO GET A BETTER IDEA OF WHAT INFORMATION IS CONTAINED IN THIS FILE, YOU MAY CONTINUE READING ALONG THIS ROW A, ON THE NEXT PAGE YOU WILL FIND A VERY SHORT JOB DESCRIPTION.


GO TO A 3 NEXT PAGE

ROW A
FRAME 3

DATA PROCESSING MACHINE OPERATOR
(JOB TITLE)

## SHORT JOB DESCRIPTION

Operate computers or auxiliary data processing machines; set machine to perform operation desired, feed in punched cards or tapes, watch for errors, pass information to next machine in the system. May wire simple plug-boards.

## DESCRIPTION OF WORK ACTIVITIES

## BY GENERAL WORK FIELD (DOT)

Work activities in this group involve setting up, adjusting, and operating data-processing, typesetting, duplicating, and similar business machines. The work is usually highly specialized and the worker must be both fast and accurate.

GO ON TO A 4 NEXT PAGE

ROW A
FRAME 4

# OCCUPATIONAL BRIEFS

**THESE MATERIALS ARE USUALLY ABOUT FOUR PAGES LONG AND COVER:**

- **JOB DUTIES**
- **WORKING CONDITIONS**
- **EARNINGS AND HOURS**
- **TRAINING REQUIRED**
- **FUTURE OPPORTUNITIES**
- **ORGANIZATIONS IN THE FIELD**
- **PLACES TO WRITE FOR MORE INFORMATION**

**IF YOU WISH TO READ A BRIEF, GO TO** B 2

**OR**

**IF YOU WISH TO FIND OUT WHAT ADDITIONAL INFORMATION IS IN THIS FILE, CONTINUE ALONG THIS ROW TO** A 5

NEXT PAGE

ROW A
FRAME 5

What high school courses will help prepare a person to work in this field ?

IF YOU WISH TO SEE SOME RECOMMENDED HIGH SCHOOL COURSES GO TO C 3

OR

IF YOU WISH TO FIND OUT WHAT ADDITIONAL INFORMATION IS IN THIS FILE, CONTINUE TO A 6

NEXT PAGE

**ROW A**
**FRAME 6**

**After high school, what kind of training or experience will prepare a person to enter this field ?**

**IF YOU WISH TO SEE SOME POSSIBILITIES YOU MAY GO TO** C 5

**OR**

**TO CONTINUE GO TO** A 7 **NEXT PAGE**

ROW A
FRAME 7

During high school, what clubs and activities may be related to this job ? What else can be done to explore this occupational field ?

INFORMATION ABOUT THESE QUESTIONS IS ON PAGES

C 6 and C 7

OR

TO SEE WHAT ADDITIONAL JOB INFORMATION IS AVAILABLE IN THIS FILE, CONTINUE ALONG ROW A

A 8

NEXT PAGE

ROW A
FRAME 8

What type of employers usually hire workers in this occupational field ?

ANSWERS TO THIS QUESTION MAY BE FOUND ON PAGE E 5

OR

YOU MAY CONTINUE TO A 9

NEXT PAGE

ROW A
FRAME 9

What other jobs are related to the one you are looking at now?

RELATED JOBS APPEAR ON E 6

OR

YOU MAY CONTINUE TO A 10

ROW A
FRAME 10

What interest patterns are usually important for workers in this occupation ?

TO FIND INFORMATION ABOUT INTERESTS GO TO E 8

**OR**

CONTINUE ALONG THIS ROW TO A 11

ROW A
FRAME 11

Still more job information is available

- job situations to which a worker must adjust
- selected information about physical demands, work conditions, aptitudes, data, people, things
- and more

IF YOU ARE INTERESTED IN THIS MATERIAL, LOOK AT FRAMES

E 9 thru E 12

**OR**

CONTINUE TO

A 12

NEXT PAGE

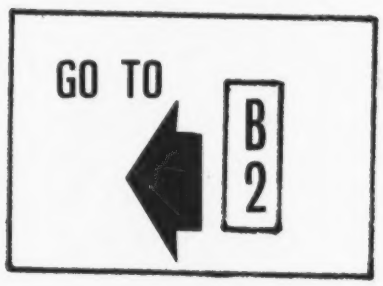
ROW A
FRAME 12

## OTHER SOURCES OF INFORMATION

If you are interested in seeing the names
of___ books
__magazines and
__audio-visual material
about this occupation
go to

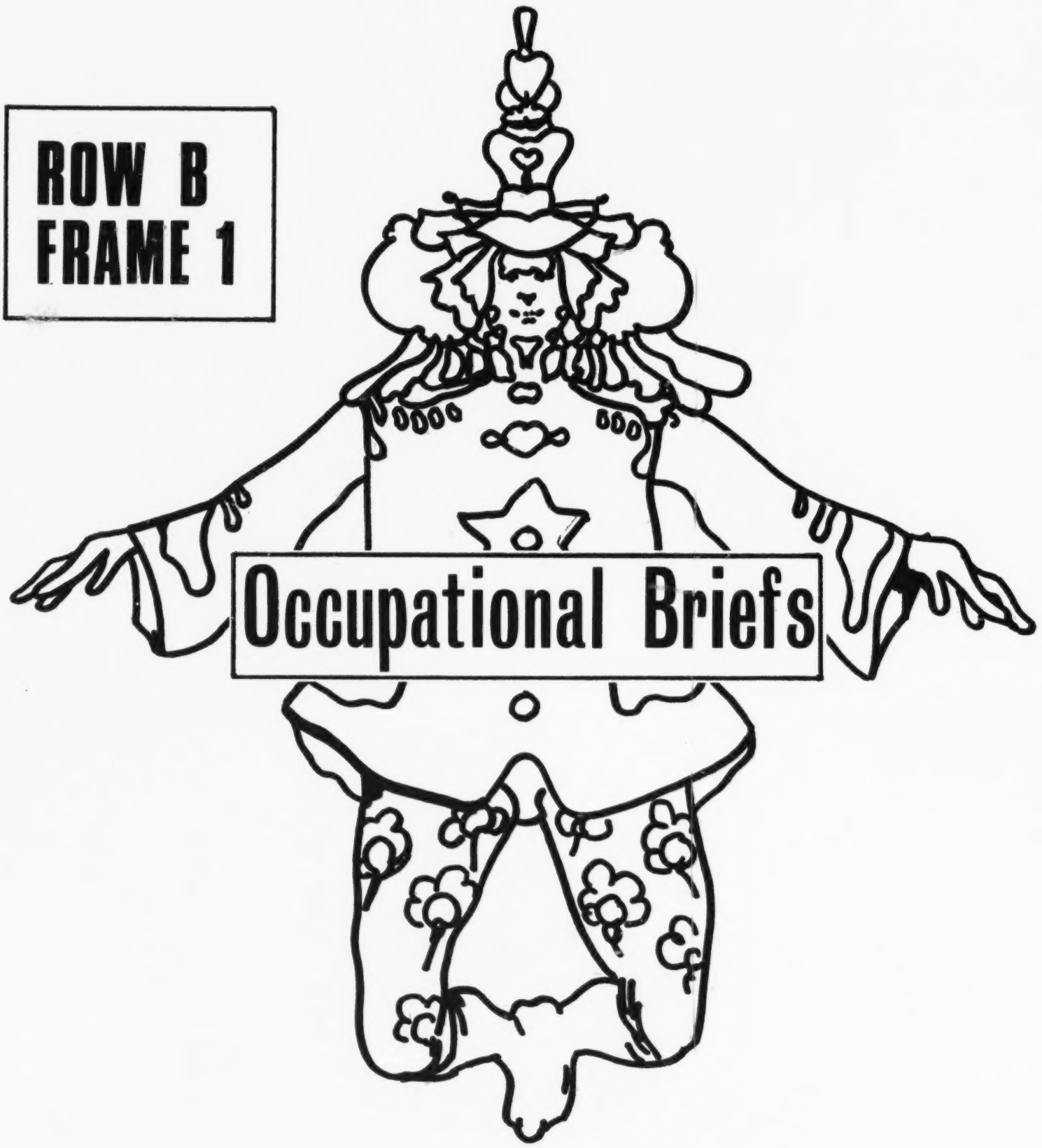



otherwise you may wish
to begin exploring by
reading a brief:




then move on to educational
information ROW C and
additional job info. ROW E

**ROW B**
**FRAME 1**




**this row — start on next page**

### Employment Outlook

More than 40,000 job openings for office machine operators are expected to occur each year during the late 1960's and through the remainder of the 1970's. Most of these openings will arise as business organizations continue to grow in size and number, and the volume of billing, computing, duplicating, and other work continues to mount. Other openings for office machine operators probably will be created by the introduction of new types of mechanical office equipment which speed recording, copying, and other office work. Still other openings will occur because of the need to replace workers who retire or stop working for other reasons. Many machine operators are young women who stop working after a few years of employment in order to stay at home and care for their families.

The number of office machine operators is expected to increase very rapidly during the remainder of the 1960's and through the 1970's. In some offices, however, the number of workers needed to operate tabulating, billing, and other types of machines may be reduced due to the spread of automated recordkeeping systems and further advances in office automation. Also, advances in interoffice communications devices for transmitting data and electronic computer technology should enable many large firms and government agencies to centralize recordkeeping functions, thus reducing the requirements for office machine operators in small branch offices. Nevertheless, any reduction in employment is expected to be limited to a relatively small number of offices and will be more than offset by the new jobs created as the volume of paperwork continues to increase in business establishments of all kinds.

### Earnings and Working Conditions

A 1965–66 Bureau of Labor Statistics survey, covering firms in metropolitan areas, provides information about salaries in several office machine operator occupations. For keypunch and tabulating machine operators, the averages are given separately for different skill groups; operators in Class A were generally experienced employees who did comparatively difficult work, whereas Class B and Class C operators worked on more routine assignments and used simpler types of equipment. The average weekly salaries reported by this survey are shown in the accompanying tabulation.

| | *Average weekly salaries, 1965–66* | |
|---|---|---|
| | *Women* | *Men* |
| Billing machine operators | $78.50 | $104.50 |
| Comptometer operators | 84.00 | ..... |
| Duplicating machine operators | 76.00 | 80.50 |
| Keypunch operators: | | |
| Class A | 90.50 | 102.00 |
| Class B | 77.50 | 89.50 |
| Tabulating machine operators: | | |
| Class A | 112.50 | 121.50 |
| Class B | 93.50 | 103.00 |
| Class C | 78.00 | 83.00 |

Because of the noise created by their machines, operators often work in groups in areas which are apart from other company offices. In other respects, working conditions for office machine operators usually are similar to those of other office workers in the same firms. (See introductory section to this chapter for additional information on Working Conditions and for Where To Go for More Information.)

## ELECTRONIC COMPUTER OPERATING PERSONNEL

(D.O.T. 213.138, .382, .582, and .588 and 233.387)

### Nature of Work

Operators of several kinds of mechanical equipment may be required whenever an electronic computer is used to prepare a payroll or to "process" other data. First, the computer's "input" must be prepared in a special code—the "machine language" which will enable the computer to process the data—then, the computer console must be operated while the work is being done; and, finally, the computer's "output," must be translated back into words and numbers which can be read. The procedures employed in accomplishing this work vary from one computer system to another; often they are more involved and more difficult to learn than the operation of the equipment itself. The number and kinds of employees needed also vary for different computer installations. A small system—and some computers are no bigger than an office desk—may be operated entirely by one or two employees. A large system, on the other hand, usually requires several workers, each of whom is assigned a specific task.

A computer's input consists of the data to be processed and the step-by-step instructions prepared by programers which tell the machine how to do the work. (Information about the occupation of Programer is given elsewhere in the *Handbook*.) In many computer systems, the input consists of punched cards prepared by *keypunch operators* (D.O.T. 213.582) or of paper tapes prepared by *data typists* (D.O.T. 213.588); less frequently, input may be prepared by operators of adding or bookkeeping machines with special attachments which perforate tapes. These machine operators do much the same work as those who use the same general type of equipment for other purposes. (For additional information on these occupations, see statements on Typists, Office Machine Operators, and Bookkeeping Workers in this chapter.)

→

262-057 O—68——18

Computer console and auxiliary equipment operators work in teams.

In some computer systems, punched cards or paper tapes can be used directly to feed information into the central computer. The fastest computer systems, however, get their input from magnetic tapes (narrow strips of plastic tape, on which data have been recorded in the form of magnetic spots or characters). Such computer systems include auxiliary equipment which transfers data from punched cards or paper tapes to magnetic tape. In some systems, this work is done on small computers. Other machines, used for the same purpose, are called converters and are run by *card-to-tape converter operators.* (D.O.T. 213.382). Converter operators may be required to wire a fairly simple plugboard, and they must know how to interpret signals from a panel of lights on the machine. They also should have sufficient understanding of the whole computer system to recognize any errors that may have occurred in preparing input or to identify other situations which could prevent the system from operating properly.

Once the facts and figures to be processed have been converted into the form used by the computer, the data are ready for the "run"—that is, for processing in the computer. Operating the computer is the responsibility of the *console operator* (D.O.T. 213.382), or computer operator, as he is sometimes called. The console operator first examines the programer's instruction sheet for the run and ascertains the procedure to be followed. He then readies the equipment, makes sure the computer is loaded with the tape or cards needed, and starts the run. As he operates the console during the run, he may have dozens of switches to manipulate and lights to observe. If the computer stops running, or its lights signal an error, he must try to locate the source of the trouble.

Before a computer's output can be read, it must be translated from machine language to words and numbers. In some systems, this is done by machines directly connected to the computer and run by the console operator or his assistant. In many large systems, however, this work is done on converters, highspeed printers, and other machines run by auxiliary equipment operators—*tape-to-card converter operators* (D.O.T. 213.382), *high speed printer operators* (D.O.T. 213.382), and others. Like operators of other kinds of auxiliary equipment, these operators may have to wire plugboards and watch for lights on their machines which signify errors. Some types of auxiliary equipment are relatively difficult to operate and, when computer systems include such equipment, operators sometimes specialize on one kind of machine. Many operators, however, run all kinds of auxiliary equipment used in a computer system.

The tape or cards used in processing data on a computer are stored after the run, and are often used again and again—as, for example, in making up a payroll at the end of every pay period. A *tape librarian* (D.O.T. 223.387), or a console operator or *auxiliary equipment operator,* may be responsible for storing tapes and making them available when they are again needed.

Many electronic computers are operated for as long as 16 to 24 hours a day. In such cases, they may be operated by two or three different shifts of workers. Usually all operators work under the general direction of a chief supervisor, and employees on each shift work under the direct supervision of the console operator on that shift.

### Where Employed

The number of console and auxiliary equipment operators employed in mid-1966 is estimated at roughly

100,000. Jobs for operating personnel are found chiefly in government agencies and in insurance companies, banks, wholesale and retail businesses, transportation and public utility companies, and manufacturing firms. Many operators are also employed in independent service organizations which process data for other firms on a fee basis.

### Training, Other Qualifications, and Advancement

When installing electronic computers, employers often fill as many of their new operator positions as possible by transferring employees from other types of jobs, frequently from jobs as operators of the tabulating and bookkeeping machines which may no longer be needed after the computer is installed. Many computer operators are also recruited from outside the firm.

In hiring outsiders, private employers usually require at least high school graduation. For positions as console operator, some college training may be preferred. In the Federal Government, applicants for auxiliary equipment operator jobs must be high school graduates, unless they have had specialized training or previous experience in some related work. Console operators employed by the Federal Government are generally required to have a college education or its equivalent in work experience; or they may be able to qualify for appointment on the basis of previous experience in computer work and general aptitude for it, as demonstrated by special tests. Many private employers also screen applicants for operating positions by giving them tests designed to measure their aptitude for the work, especially their ability to reason logically.

Beginners hired for work of this kind, or transferred to it from other positions in their firms, are seldom expected to have had specific training as operators. Most employers provide the necessary training after the worker is hired. The training of auxiliary equipment operators may require a few weeks, that of console operators somewhat longer. Console operators usually attend classes where they learn how to mount tapes and operate the console and become sufficiently familiar with the equipment they are using to be able to trace the reasons for mechanical failures. This training is supplemented by further instruction on the job.

As they gain experience, operating personnel may be assigned to operate more complex pieces of equipment. Eventually they may be promoted to supervisory positions or jobs which combine some supervisory duties with console operation. Console operators may acquire, through on-the-job experience, an understanding of programing which, with additional training, may enable them to qualify for work as programers.

### Employment Outlook

A growing and increasingly complex economy is expected to cause the use of electronic data-processing equipment to continue to increase very rapidly throughout the late 1960's and the 1970's. Computers are being put to new uses almost daily, and, as the tasks they perform become even more varied, many more business firms will be utilizing them. Although the size of the staff required to operate a computer installation may be reduced somewhat as new types of equipment are developed, the total number of computer and auxiliary equipment operators is expected to increase very rapidly, nevertheless.

Thousands of operators will be needed to fill new jobs, both in firms with their own computer installations and in service centers which rent computer time to businessmen. Many operators will also be needed to replace operators of computer systems who transfer to other kinds of work or stop working. As in the past, employers will fill some positions by training people already in their employ, but many others will be filled by hiring outsiders.

The equipment changes which are expected in computers may also produce changes in job requirements for console and auxiliary equipment operators. Because of advances in technology, much of the equipment in use today is far less complex to operate than the first computers of the early 1950's; and future changes may bring further simplification. As a consequence, newcomers to this field may find it easier than have applicants in the past to qualify for the openings available, but competition for those jobs that become available is likely to become correspondingly greater.

### Earnings and Working Conditions

Information about the salaries of computer operating personnel in over 2,000 companies throughout the country is available from a private survey conducted in 1966. The average salary for beginning console operators was $101 a week. Experienced console operators averaged up to $180 a week. The salaries of auxiliary equipment operators working with high-speed printers average $127 and tape librarians averaged $118 a week. The difference between the salary of the lowest and highest paid employees in each of the job classifications surveyed was much greater than these figures suggest, however. For example, the highest salary reported for a skilled console operator was $267 a week—about three times the lowest salary reported for a comparable job. Many differences of this kind were due to differences in salary levels in various parts of the country and in individual companies and industries; to some extent, they were also due to differences in the complexity of the work performed by operators with the same job titles.

Salaries of computer personnel in the Federal Government are roughly comparable with those in private industry. In early 1967, beginning console operators started at about $103 a

→

week ($5,331 a year) and auxiliary equipment operators at about $82 a week ($4,269 a year). The maximum salary paid to experienced console operators in the Federal Government was about $193 a week ($10,045 a year); a few in supervisory positions may earn up to about $276 a week ($14,338 a year), usually after several years of experience. Skilled auxiliary equipment operators earned up to about $133 a week ($6,915 a year) after several years of experience.

Operators of electronic computer systems generally work the same number of weekly hours and are allowed the same holidays, vacations, and other benefits as most office employees. Since many computers are operated on a two- or three-shift basis, scheduled hours for some console and auxiliary equipment operators include late evening or nightwork. Tape librarians usually work only when day shifts are on duty. (See introduction to this chapter for additional information on Working Conditions.)

### Where To Go for More Information

Information on careers in electronic data processing may be obtained from:

Data Processing Management Association, 524 Busse Highway, Park Ridge, Ill. 60068.

A bibliography which includes materials giving information about computer operating personnel may be obtained from:

Association for Computing Machinery, 211 East 43d St., New York, N.Y. 10017.

Traffic operator handles long distance calls.

## TELEPHONE OPERATORS

(D.O.T. 235.862)

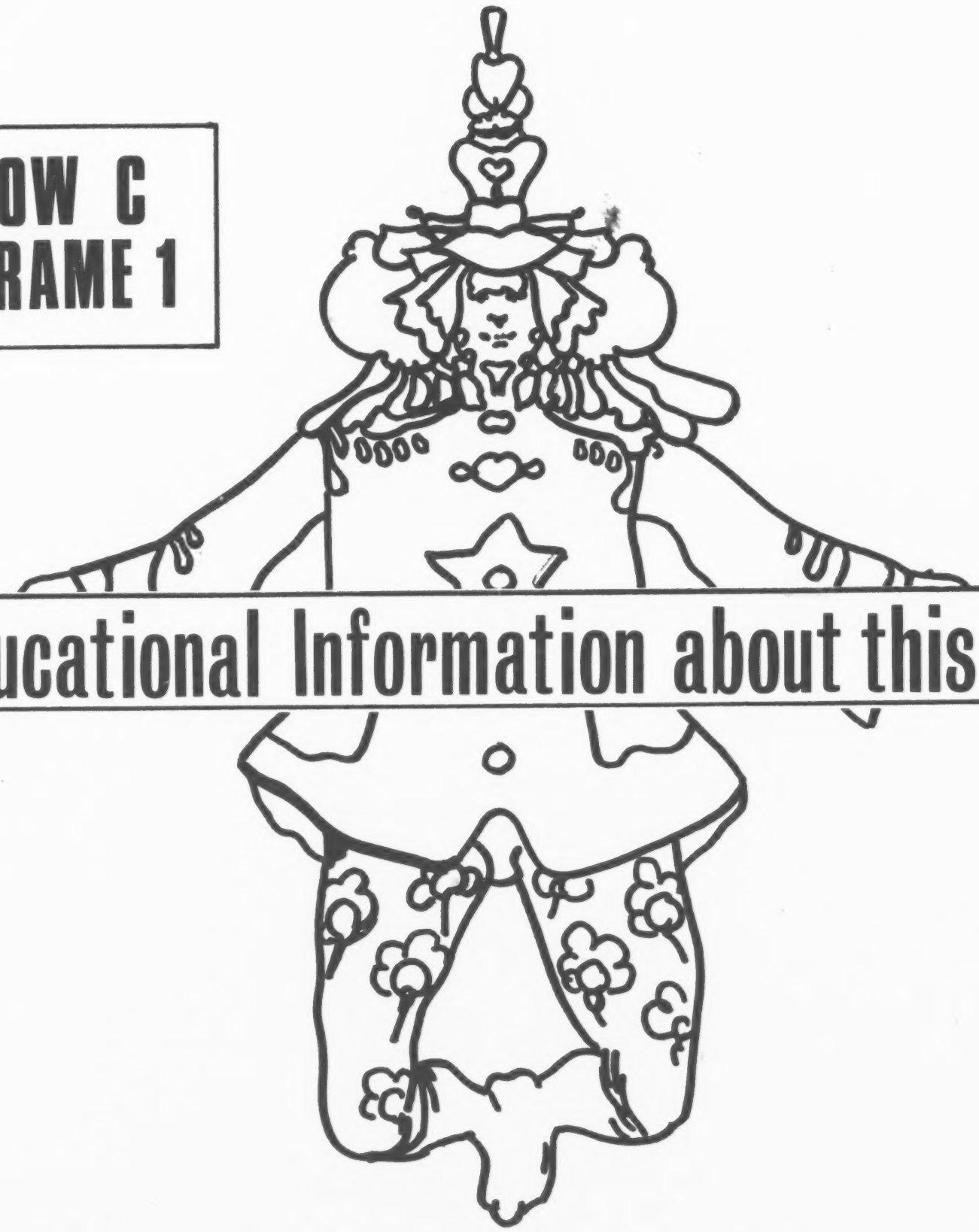
### Nature of Work

Although millions of telephone calls are dialed each day without the assistance of a telephone operator, practically every telephone user sometimes makes a call that cannot be completed without the operator's help. Often the call is a long distance one on which the operator is asked to reverse charges, locate a particular individual, or provide information about the cost of the call. Frequently, the caller needs help because he does not have the correct telephone number. Or, the operator's services may be needed to call the police in an emergency, assist a blind person who is unable to dial for himself, or arrange a conference telephone call which will enable business executives in several different locations to confer by telephone.

These and many other services are provided by two groups of telephone operators—those who work at the switchboards in central offices of telephone companies; and operators or attendants who work at private branch exchange (PBX) switchboards in other types of enterprises. Usually, workers in both groups operate their equipment by inserting and removing plugs attached to cords, by manipulating keys and dials, and by listening and speaking into their headsets. Some switchboards are of the keyboard type and are operated by pushbuttons and dials.

*Central office operators* are usually contacted only when callers need assistance. Because assistance is most frequently sought for long distance calls, most central office operators are *long distance operators.* They obtain from each caller the information needed to complete the call, make the necessary connections with the party being called, and record the details of each call for billing purposes. Many *information operators* (D.O.T. 235.862) also work in telephone com-

ROW C
FRAME 1



# Educational Information about this Job

see frames C2 thru C7

| ROW | C |
|---|---|
| FRAME | 2 |

YOU WILL FIND EDUCATIONAL INFORMATION ABOUT THIS OCCUPATION ON THE FOLLOWING PAGES:


General High School Program ..... C 3

Specific Courses in High School ..... C 4

Routes to the Job ..... C 5

Clubs and Activities ..... C 6

Other Things to Do ..... C 7

College Admission Programs ..... D 3

Education After High School ..... D 5

Sample Programs After High School ..... D 6


BEGIN EDUCATIONAL INFORMATION ON C 3

ROW C
FRAME 3

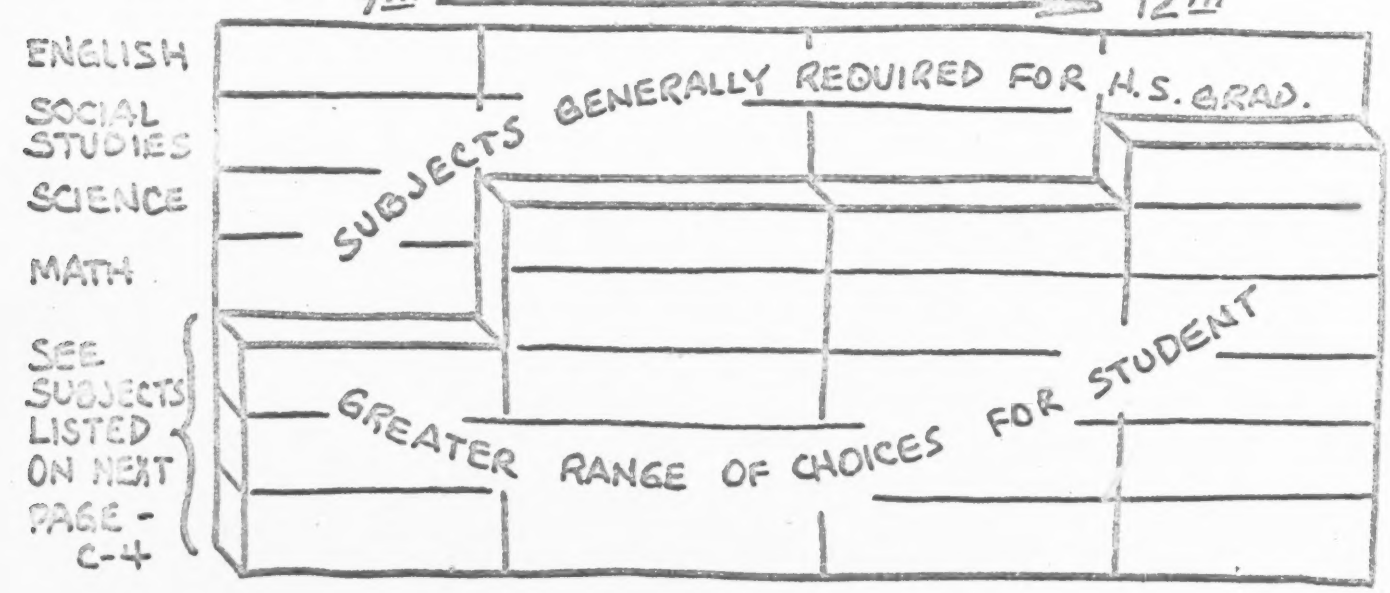
## DATA PROCESSING MACHINE OPERATORS

YOU CAN TAKE A VARIETY OF COURSES IN HIGH SCHOOL TO PREPARE FOR THIS OCCUPATION. YOU MAY WISH TO CONSIDER SOME OF THE RECOMMENDATIONS WHICH FOLLOW:

THE PROGRAM YOU SELECT FROM THE SUGGESTIONS BELOW SHOULD PREPARE YOU TO:

- ☐ MEET H.S. GRADUATION REQUIREMENTS ONLY.
- ☐ MEET H.S. GRADUATION REQUIREMENTS WITH SPECIFIC SKILLS.
- ☑ MEET GENERAL ADMISSION REQUIREMENTS FOR VOCATIONAL AND TECHNICAL TRAINING AFTER HIGH SCHOOL.
- ☐ MEET GENERAL ADMISSION REQUIREMENTS FOR COLLEGE - SEE * D 3
- ☐ MEET SPECIAL REQUIREMENTS IN ADDITION TO THOSE USUALLY REQUIRED FOR COLLEGE ADMISSION.

IN ADDITION TO THE BASIC SUBJECTS LISTED, YOU SHOULD ALSO CONSIDER THE GENERAL AREAS AND SPECIFIC ELECTIVES ON THE NEXT PAGE - C 4




* TO SEE GENERAL INFORMATION ABOUT PREPARING FOR COLLEGE, GO TO D 3

OR

LOOK AT SPECIFIC H.S. COURSES RELATED TO THIS JOB GO TO C 4 NEXT PAGE

ROW C
FRAME 4

DATA-PROCESSING MACHINE OPERATOR

## EDUCATION, HIGH SCHOOL

SINCE YOU CAN TAKE A VARIETY OF COURSES IN HIGH SCHOOL TO PREPARE YOU FOR THIS OCCUPATION, YOU MAY WISH TO CONSIDER SOME OF THE SPECIFIC RECOMMENDATIONS WHICH FOLLOW.

▨ = USUALLY REQUIRED TO GRADUATE
▤ = RECOMMENDED FOR STUDENTS PREPARING TO ENTER THIS JOB
▥ = ADDITIONAL RECOMMENDATIONS

| GENERAL SUBJECT AREAS | UNITS (YEARS) 1 | 2 | 3 | 4 | 4+ | COMMENTS AND SOME SPECIFIC POSSIBILITIES |
|---|---|---|---|---|---|---|
| ☑ ENGLISH | ▨ | ▨ | ▨ | ▨ | | |
| ☑ SOCIAL STUDIES | ▨ | ▨ | ▨ | | | |
| ☑ SCIENCE | ▨ | ▤ | ▤ | | | Biology, Chemistry, Physics |
| ☑ MATH | ▨ | ▤ | ▤ | ▤ | | Algebra, Geometry, Trig. Computer Math |
| ☐ LANGUAGE | | | | | | |
| ☑ BUSINESS | ▥ | ▥ | | | | Typing, Office Practice |
| ☐ ART | | | | | | |
| ☑ OCCUPATIONAL EDUCATION | ▥ | ▥ | | | | Data Processing |
| ☐ MUSIC | | | | | | |
| ☐ HOME ECONOMICS | | | | | | |
| ☑ INDUSTRIAL ARTS | | | | | | Electricity |
| ☐ | | | | | | |

PHYSICAL EDUCATION AND HEALTH ED. ARE USUALLY REQUIRED.

PREPARING FOR AN OCCUPATION IS ONLY ONE THING TO THINK ABOUT IN PLANNING YOUR HIGH SCHOOL PROGRAM. YOU MAY WISH TO EXPLORE A VARIETY OF FIELDS OR PERHAPS DEVELOP A PERSONAL SKILL OR TALENT.

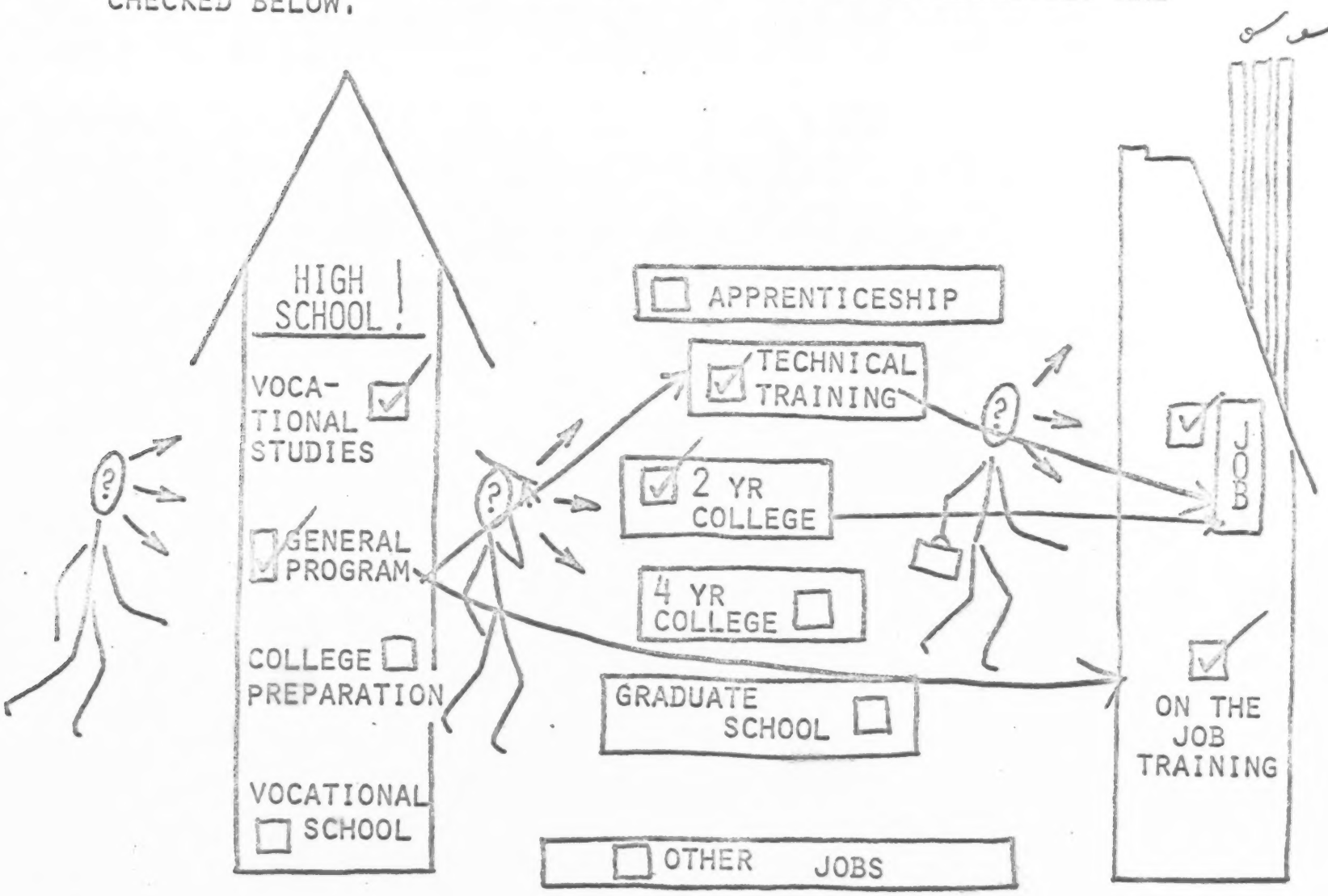
• TO CONTINUE GO TO C 5 NEXT PAGE

| | |
|---|---|
| ROW | C |
| FRAME | 5 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

HOW DOES A PERSON GET THIS JOB?

THERE IS USUALLY MORE THAN ONE WAY. SOME POSSIBILITIES ARE CHECKED BELOW.




---

. TO LOOK AT EDUCATIONAL POSSIBILITIES AFTER HIGH SCHOOL, GO TO D 5

OR

. CONSIDER CLUBS AND ACTIVITIES YOU CAN PARTICIPATE IN DURING HIGH SCHOOL.

GO TO C 6

| ROW | C |
|---|---|
| FRAME | 6 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

## EXTRA CURRICULAR CLUBS & ACTIVITIES

You may want to join some of the activities below. There are many more possibilities. You could start your own activity.

☐ MUSIC
- Band
- Orchestra
- Chorus
- Entertainment

☐ ART, INTERIOR DESIGN
- Ceramics
- Photography
- Publications
- Architects

☐ SOCIAL STUDIES
- Political Science
- Urban Problems

☐ HOME EC.
- Sewing
- Cooking
- Family Life

☑ SERVICE
- ✓Audio-Visual
- School Guides
- Conservation

☐ FUTURE
- Teachers
- Health Careers
- Farmers

☐ LIBRARY

☐ SCIENCE
- Geology
- Astronomy
- Biology
- Physics
- Chemistry
- Aerospace
- Horticulture

☐ RECREATION
- Chess
- Bridge
- Skiing

☑ OCC. ED. AND INDUSTRIAL ARTS
- Printing
- Automobile
- Metal
- ✓Electricity
- Wood
- Drafting
- Flying
- Plastics

☐ LANGUAGE
- Ancient
- Modern

☐ PHYSICAL EDUCATION
- Individual Sports
- Team Sports
- Cheerleaders
- Dance

☑ BUSINESS
- ✓Data Processing
- Retail

☐ ENGLISH
- Newspaper
- Journalism
- Yearbook
- Creative Writing
- Dramatics, Stage
- Debating
- Public Speaking
- Literature

☐ STUDENT GOVERNMENT
- Class-Officers
- Representatives
- Special Events

☑ MATH
- ✓Computer
- Engineering

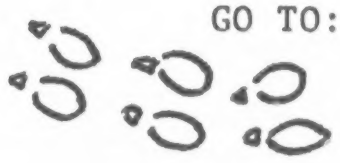
CONTINUE TO C/7 NEXT PAGE

| ROW | C |
|---|---|
| FRAME | 7 |

YOU MAY WANT TO KNOW MORE ABOUT A JOB YOU LIKE BY DOING SOME OF THESE THINGS. THERE ARE MANY MORE.

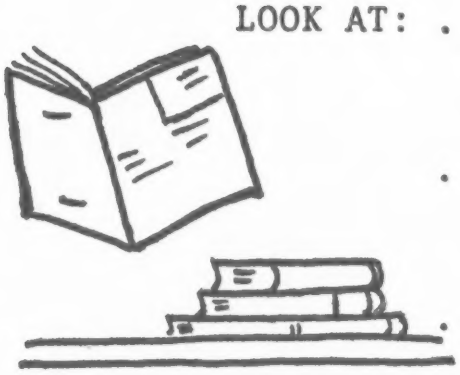
TALK TO:

- Neighbors, friends and relatives who know about the job or work in it.
- Guidance counselors and teachers who have materials about job fields.
- Important officials in business, union and professional organizations.



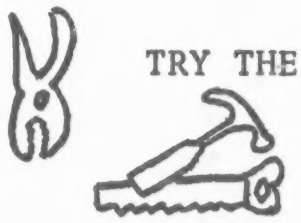
GO TO:

- Offices and plants where the work actually goes on.
- Public talks by people experienced in this field.



LOOK AT:

- Career briefs, the Occupational Outlook Handbook at the school or local library. Then WRITE for information.
- Programs from school catalogs and booklets by special training schools, businesses, professional and labor organizations.
- Current magazine articles, bulletin boards, TV programs about careers.
- Journals published by trade and professional organizations.

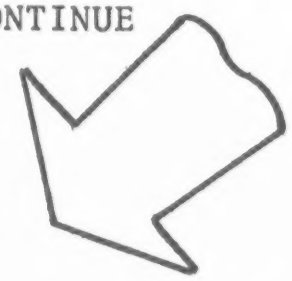


TRY THESE:

- Related part time or summer jobs.
- You can volunteer to help a worker in almost any field.

THIS IS THE LAST PAGE OF EDUCATIONAL INFORMATION. TO CONTINUE EXPLORING, GO TO

Other sources of information D 2 or Employment information E 4



ROW C
FRAME 8

DATA PROCESSING MACHINE OPERATOR
(JOB TITLE)

IN ORDER TO GET A BETTER IDEA OF WHAT THIS INTEREST MEANS, LOOK AT THE FOLLOWING ACTIVITIES AND EXAMPLES.

## INTEREST AREA 3 - ROUTINE AND ORGANIZED

Interested in doing a job which is organized and routine and deals with specific products or goods. Likes a job where there are definite rules and methods to follow and where the job is all set up in advance. Does such activities as routine checking and recording, operating automatic machines, or simple sorting, inspecting.

SAMPLE JOB-WORKER SITUATIONS

- Feed sheets of paper into a copying machine.
- Checks out customers' purchases at a grocery store.
- Drives bus along established route.
- Gives manicures in a beauty shop.
- Addresses envelopes and puts on stamps.

SAMPLE EVERYDAY EXPERIENCES

- Checks clubs' list for accuracy.
- Takes minutes at group meetings.
- Sets tables for club parties.
- Puts together jig-saw puzzles.
- Addresses envelopes announcing club meetings.

TO CONTINUE, GO TO C 9

ROW C
FRAME 9

DATA PROCESSING MACHINE OPERATOR
(JOB TITLE)

People usually prefer certain activities because of the kinds of interests they have. Below are examples of activities that someone with this interest might enjoy. They can help you decide if you have this same interest.

## INTEREST AREA 9 - WORKING ALONE

WORK EXPERIENCE
Working as auto mechanic's helper
Driving an automobile or truck
Working as gardener's assistant
Developing pictures in a darkroom
Shoveling snow
Doing construction or excavation work
Washing and waxing cars

HOBBIES
Planting vegetables or flowers
Sailing
Tinkering with engines and motors
Being a ham radio operator
Racing midget or stock cars
Taking, developing, and printing pictures

LEISURE ACTIVITIES
Repairing a bicycle
Flying kites
Caring for shrubbery
Keeping tools clean
Installing and grounding a TV antenna

HOME AND FAMILY EXPERIENCES
Making home repairs
Canning vegetables and fruit
Dry cleaning own clothes
Making adjustments on TV set
Clearing brush

JOB PREFERENCES
Laboratory Technician
Welder
Sewing Machine Operator
Cook
Electrician
Carpenter
Butcher
Appliance Repairman
Business Machine Operator
Truck Driver
Piano Tuner
Dental Technician
Machinist
Pilot

SCHOOL ACTIVITIES AND INTERESTS
Taking a driver education course
Operating a printing press to get out the school paper
Taking a course in electric wiring
Working in the school lab
Developing pictures for photography club

TO CONTINUE, GO TO C 10

ROW C
FRAME 10

DATA PROCESSING MACHINE OPERATOR
(JOB TITLE)

People usually prefer certain activities because of th kinds of interests they have. Below are examples of activities that someone with this interest might enjoy. They can help you decide if you have this same interest.

## INTEREST AREA 3 - ROUTINE AND ORGANIZED

WORK EXPERIENCE
Waiting on customers in 5 & 10¢ store
Short order cook
Addressing envelopes
Cafeteria or grocery store checker
Setting tables

CLUBS AND ORGANIZATIONS
Checking mailing lists for accuracy
Filing club records
Setting tables for club parties
Stenciling announcements
Sorting used clothing according to size and type for charitable organization

LEISURE ACTIVITIES
Knitting

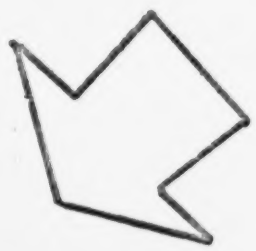
HOME AND FAMILY EXPERIENCE
Canning vegetables and fruit
Knitting
Setting tables
Sorting laundry
Ironing

JOB PREFERENCES
Business machine operator
Typist
File Clerk
Assembler
Switchboard Operator
Sewing machine operator
Truck Driver

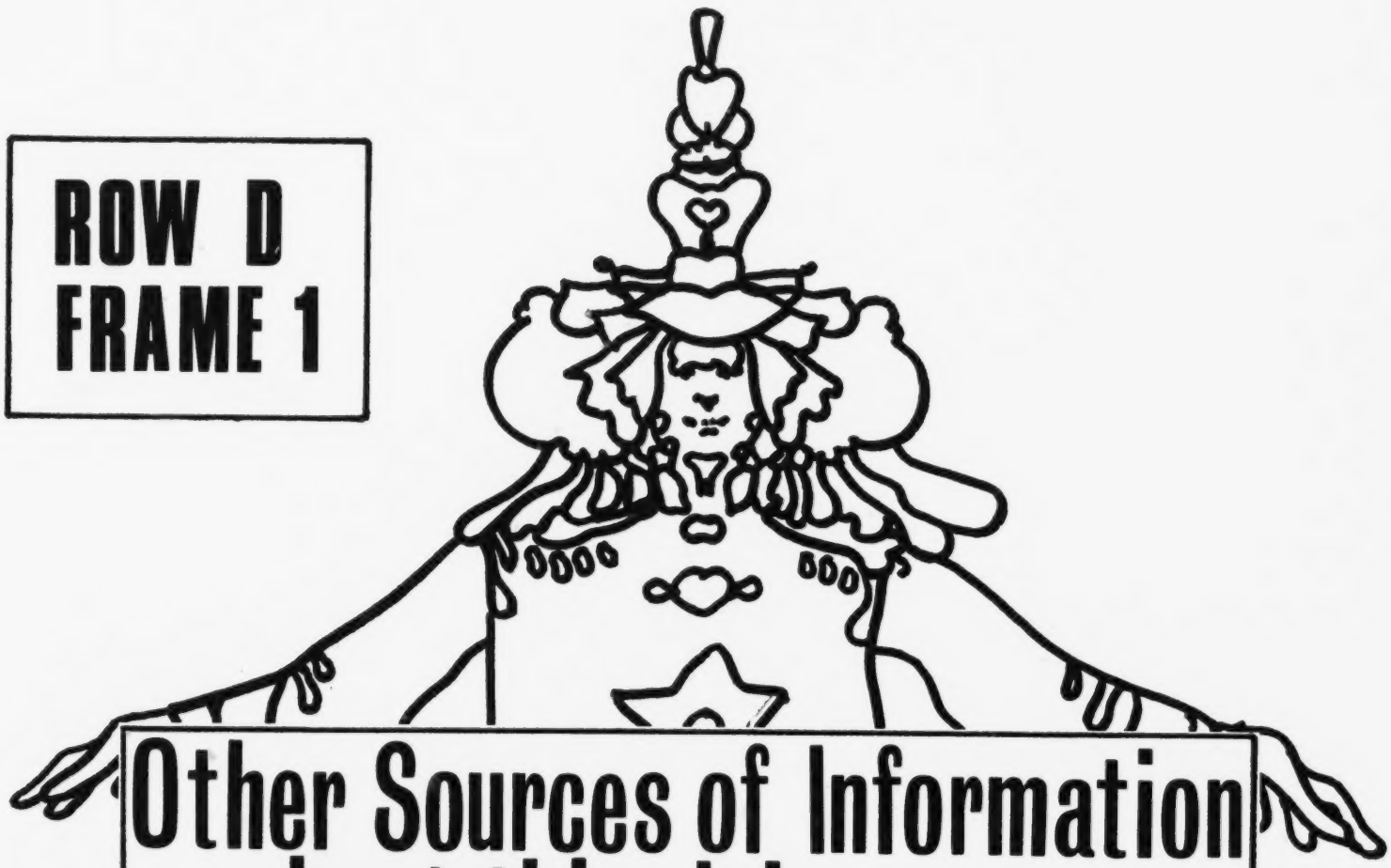
SCHOOL ACTIVITIES AND INTERESTS
Proofreading a copy for school paper
Courses with a practical application e.g., commercial, home economics, blueprint reading, electroplating
Conducting routine tests in a laboratory

GAMES
Putting together a jig saw puzzle
Keeping scores, bridge, baseball, etc.

THIS IS THE LAST PAGE OF MATERIAL ON INTERESTS. LOOK AT WORKER CHARACTERISTICS. GO TO E 9



**ROW D**
**FRAME 1**



# Other Sources of Information about this Job

* Books
* Magazines
* A-V Materials

see next page D2

| ROW | D |
|---|---|
| FRAME | 2 |

Data-Processing Machine Operators
(JOB TITLE)

## ADDITIONAL SOURCES OF INFORMATION

CAREER FICTION (STORIES ABOUT WORKING AT THIS JOB.)

(See your librarian.)

CAREER BIOGRAPHY (LIFE STORIES OF REAL PROPLE WHO HAVE WORKED IN THIS OCCUPATION.)

(See your librarian.)

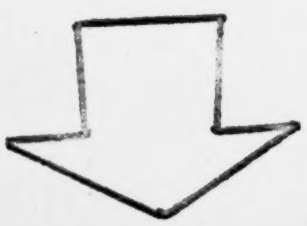
MAGAZINES (PERIODICALS)

Computers and Automation
Data Processing Digest
Business Automation
Datamation

OTHER PRINTED MATERIALS

Carroll, John M. Careers and Opportunities in Computer Science. Dutton, 1967.
Fischer, George. Your Career in Computers. Meredith, 1968. $4.19.
Halacy, D. S. Computers: The Machines We Think With. Concord. $4.95.
Parkhill, Douglas F. Challenge of the Computer Utility. Addison-Wesley, 1966.

TO CONTINUE ADDITIONAL SOURCES OF INFORMATION, GO TO E 2



ROW D
FRAME 3

## EDUCATION, High School

## PROGRAMS RECOMMENDED FOR COLLEGE ADMISSION

If you are interested in preparing to attend college, consider the following:

Most college catalogs state the admission requirements in "minimum and recommended" terms. A basic college preparatory program and a preferred program are outlined below. You may vary the programs to meet your individual needs.

| A Basic Program | | A Preferred Program | |
|---|---|---|---|
| English ..... | 4 units (years) | English ..... | 4 units (years) |
| Social Studies ... | 3 units | Social Studies ... | 3-4 units |
| Mathematics ..... | 2-3 units | Mathematics ..... | 4 units |
| Science ..... | 2-3 units | Science ..... | 3-4 units |
| Foreign Language*. | 2-3 units | Foreign Language . | 3-4 units of same language |
| Other Electives .. | 3-4 units | Other Electives .. | 1-3 units |
| Total ..... | 18-19 units | Total ..... | 19-21 units |

* Many colleges require at least 2 units in a foreign language for admission to a Liberal Arts program but not for other programs, such as engineering. Most colleges recommend the study of one foreign language in high school for at least two years, preferably three or four years.

TO CONTINUE WITH EDUCATIONAL INFORMATION GO TO C 4

| ROW | D |
|---|---|
| FRAME | 5 |

DATA PROCESSING MACHINE OPERATOR
(JOB TITLE)

## EDUCATION, After High School

There are more than 2500 schools and colleges in the United States. Some of them offer training in this career field. They differ both in types of programs and in the number of years required for successful completion. The most appropriate level of education for this occupation is checked below.

- ☐ 1 year or less
- ☑ 2 year schools and colleges (some with 1 year programs)
- ☐ 4 year colleges
- ☐ 4 year college plus graduate professional school

Listed below are some schools in New York State which prepare people in this field:

ONONDAGA COMMUNITY COLLEGE

BRONX COMMUNITY COLLEGE

AUBURN COMMUNITY COLLEGE

MONROE COMMUNITY COLLEGE

AGRICULTURAL AND TECHNICAL COLLEGE AT ALFRED

AGRICULTURAL AND TECHNICAL COLLEGE AT CANTON

AGRICULTURAL AND TECHNICAL COLLEGE AT DELHI

A SAMPLE PROGRAM IS SHOWN ON D 6

OR

YOU MAY CONTINUE EDUCATIONAL INFORMATION (CLUBS AND ACTIVITIES) ON C 6

ROW D
FRAME 6

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

## EDUCATION, AFTER HIGH SCHOOL

FOLLOWING IS A SAMPLE PROGRAM FROM A SCHOOL WHICH PREPARES PEOPLE FOR THIS OCCUPATION.

### DATA PROCESSING—A.A.S. Degree

**FIRST SEMESTER**

| | Cl. | Lab. | Cr. |
|---|---|---|---|
| ENG 103 Communication Skills I | 3 | | 3 |
| MAT 109 Data Processing Mathematics I | 3 | | 3 |
| DAP 101 Fundamentals of Data Processing | 3 | 3 | 4 |
| DAP 103 Unit Record Equipment | 2 | 3 | 3 |
| ACC 101 Accounting I | 4 | | 3 |
| PE 101 Physical Education I | | 2 | 1 |
| | 15 | 8 | 17 |

**THIRD SEMESTER**

| | Cl. | Lab. | Cr. |
|---|---|---|---|
| SOS 201 Survey of Social Science I | 3 | | 3 |
| MAT 203 Statistics | 3 | | 3 |
| DAP 201 Computer Programming I | 2 | 6 | 4 |
| DAP 203 Systems Development and Design | 2 | 3 | 3 |
| ACC 202 Accounting IV, Cost | 4 | | 3 |
| PE 201 Physical Education III | | 2 | 1 |
| | 14 | 11 | 17 |

**SECOND SEMESTER**

| | Cl. | Lab. | Cr. |
|---|---|---|---|
| ENG 104 Communication Skills II | 3 | | 3 |
| MAT 110 Data Processing Mathematics II | 3 | | 3 |
| DAP 102 Introduction to Programming | 2 | 2 | 3 |
| DAP 104 Data Processing Applications | 2 | 3 | 3 |
| ACC 102 Accounting II | 4 | | 3 |
| SCIENCE ELECTIVE SCI 101 or SCI 102 | 2 | 2 | 3 |
| PE 102 Physical Education II | | 2 | 1 |
| | 16 | 9 | 19 |

**FOURTH SEMESTER**

| | Cl. | Lab. | Cr. |
|---|---|---|---|
| SOS 102 Survey of Social Science II | 3 | | 3 |
| ENG 220 Business Communications | 3 | | 3 |
| DAP 202 Computer Programming II | 2 | 6 | 4 |
| DAP 204 Advanced Computing and Programming Systems | 2 | 3 | 3 |
| DAP 206 Data Processing Supervision | 2 | | 2 |
| DAP 211 Field Project in Data Processing | 1 | 3 | 2 |
| PE 202 Physical Education IV | | 2 | 1 |
| | 13 | 14 | 18 |

CONTINUE TO C 6

| | |
|---|---|
| A... | D |
| FILME | 8 |

DATA PROCESSING MACHINE OPERATOR
(JOB TITLE)

IN ORDER TO GET A BETTER IDEA OF WHAT THIS INTEREST MEANS, LOOK AT THE FOLLOWING ACTIVITIES AND EXAMPLES.

## INTEREST AREA 9 - WORKING ALONE

Interested in work that can be done alone. Other people may be around but the worker uses his own efforts, knowledge, and abilities to do the job. The worker follows established rules and methods to do such things as operate, drive, or control machines; repairs, tests, or installs equipment or processes materials.

### SAMPLE JOB-WORKER SITUATIONS

- Sets up a machine that forms and folds envelopes.
- Fashions dentures from impression taken of patients' gums.
- Tans hides to make saddles and other leather goods.
- Operates equipment to dry-clean clothing.
- Installs and repairs plumbing.

### SAMPLE EVERYDAY EXPERIENCES

- Ham radio operator.
- Member of volunteer fire department.
- Develops pictures in a darkroom.
- Strips and refinishes old furniture in antique style.
- Tunes up motor and makes minor repairs on family automobile.
- Races midget or stock cars.
- Prepares and cooks food for family get-togethers.

TO CONTINUE, GO TO

| | |
|---|---|
| ROW | D |
| FRAME | 9 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

CHARACTERISTIC 12 - SET STANDARDS

Likes and gets along in situations involving:

Attention to every detail.
Following formulas and specifications exactly.
Sticking strictly to rules and methods.
Making something come out exactly right.

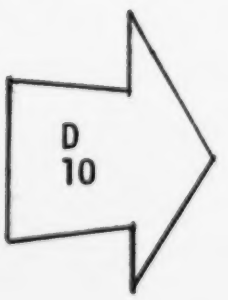
SAMPLE JOB-WORKER SITUATIONS

- The Electrician strictly keeping electrical codes.
- The Ballet Dancer's precision control of timing and pattern of dance movements.
- The Machinist painstakingly finishing parts when a mistake of one ten-thousandth of an inch would ruin the part.
- The Pharmacist mixing ingredients by exact formula.

SAMPLE EVERYDAY EXPERIENCES

- Tiles floor following pattern.
- Repairs TV set according to manuals.
- Fits or alters own or friends' dresses.
- Types letters that are free of errors.
- Builds boat models to scale.

TO CONTINUE, GO TO



| ROW | D |
|---|---|
| FRAME | 10 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

CHARACTERISTIC 2 - ROUTINE AND REPETITIVE

Likes and gets along in situations involving:

Activities done in a set order and according to set rules.
Activities that last only a short time and that are repeated over and over again.
Doing the same job all the time without interruption.
Doing one thing at a time.
Doing easy, uncomplicated jobs.

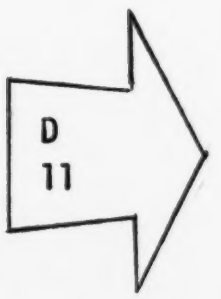
SAMPLE JOB-WORKER SITUATIONS

- The Assembly Line Worker performing over and over again the same assembly of instrument parts.
- The Model posing for pictures taken by a Commercial Photographer to be used for advertising purposes.
- The Coin Vending Machine Collector driving a truck over an established route to collect coins and refill machines.
- The Information Operator answering questions and using directories.
- The Bus Driver transporting passengers over definite routes according to time schedules.

SAMPLE EVERYDAY EXPERIENCES

- Presses clothes.
- Waxes floors.
- Addresses envelopes announcing community function.
- Ushers at school plays.
- Completes numbered painting kits.

TO CONTINUE, GO TO



| ROW | D |
|---|---|
| FRAME | 11 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

Every worker must handle a variety of situations in a job. Listed below are some sample activities that might appeal to a person with this characteristic.

CHARACTERISTIC 12 - SET STANDARDS

WORK EXPERIENCE
Typist
Stenographer
Retail receiving clerk dry cleaning store
Sales clerk
Cashier
Proofreader

CLUBS AND ORGANIZATIONS
Counts ballots and prepares official reports of organization's election results
Holds position of club treasurer
Enjoys checking club membership list for accuracy
Recording secretary for club taking exact minutes of meetings

LEISURE ACTIVITIES
Sews and fits dresses for friends
Builds garage according to blueprint
Follows instructions when knitting

HOME AND FAMILY EXPERIENCES
Sets up and keeps family budget
Fixes TV set according to manual
Measures and lays tiles according to pattern
Decorates home according to plan
Pays close attention to timing in cooking to get best results

HOBBIES
Makes model airplanes or boats according to scale plans
Embroiders printed patterns on tablecloths
Sews clothes according to pattern
Uses exact settings on camera to take pictures

JOB PREFERENCES
TYPIST-Copying names and street addresses without error
SEWING MACHINE OPERATOR-Precisely guiding material being sewed to produce neat, even seams
RUG REPAIRMAN-Reweaving damaged areas of costly oriental rugs, exactly duplicating original design
COOK-Exercising strict adherence to established recipes

SCHOOL ACTIVITIES AND INTERESTS
Operates duplicating machine for school newspaper
Carries out precise experiments in school laboratory
Wins medal for being most accurate typist
Elects to take biology and chemistry courses
Joins math club

TO CONTINUE, GO TO D 12

| ROW | D |
|---|---|
| FRAME | 12 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

Every worker must handle a variety of situations in a job. Listed below are some sample activities that might appeal to a person with this characteristic.

CHARACTERISTIC 2 - ROUTINE AND REPETITIVE

WORK EXPERIENCE
Shines shoes
Delivers newspapers
Mows lawns
Washes cars
Runs errands
Selling popcorn
Usher
Bucket boy on a golf course

CLUBS AND ORGANIZATIONS
Finds satisfaction in activities such as: addressing envelopes and cards to notify members of a meeting, etc., collecting tickets at a club or organization function, distributing material at meetings, keeping attendance records

HOME AND FAMILY EXPERIENCES
Finds satisfaction in doing such things as: washing clothes, washing dishes, pressing clothes, waxing floors, mending socks.

JOB PREFERENCES
CLERK-Who spends the entire time operating an adding machine to add and subtract columns of figures
SHEET SEWER-Sewing hems of sheets all day
STENOGRAPHER-Taking straight dictation only
PRESS OPERATOR-Whose job consists only of observing a machine turning out thousands of uniform items
DUPLICATING MACHINE OPERATOR-Reproduces handwritten matter, using duplicating machine.

GAMES
Likes to play: handball, Ping Pong, tennis.

THIS IS THE LAST PAGE OF MATERIAL ON WORKER CHARACTERISTICS. LOOK AT WORKING CONDITIONS AND PHYSICAL ACTIVITIES.

GO TO E 10

**ROW E**
**FRAME 1**

# ADDITIONAL INFORMATION ABOUT THIS JOB

* Related Jobs
* Job Interests (DOT)
* Workers Characteristics (DOT)
* Sources of Jobs (SIS)
* And More

Start at E 4 and continue thru E 12

| ROW | E |
|---|---|
| FRAME | 2 |

DATA-PROCESSING MACHINE OPERATORS
(JOB TITLE)

# ADDITIONAL SOURCES OF INFORMATION

## CONTINUED

### AUDIO-VISUAL MATERIALS

Audio Tape
Your Future in Data Processing
No. D8-112. Guidance Associates
(Junior and Senior High School)

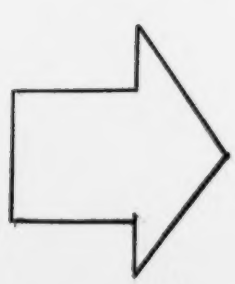
### GAMES, PROBLEM-SOLVING KITS, ETC.

(See your librarian.)

THIS IS THE LAST PAGE OF ADDITIONAL SOURCES OF INFORMATION.
TO CONTINUE EXPLORING, GO TO

ADDITIONAL JOB INFORMATION

E
4



| ROW | E |
|---|---|
| FRAME | 4 |

YOU WILL FIND ADDITIONAL INFORMATION ABOUT THIS OCCUPATION ON THE FOLLOWING PAGES:


Sources of Employment ... E 5

Related Jobs ... E 6

Job Lattices ... E 7

Interests ... E 8

Worker Characteristics ... E 9

Physical Activities and Working Conditions ... E 10

Future Opportunities ... E 11

Your Personal Checklist ... E 12


BEGIN ADDITIONAL INFORMATION ON E 5

ROW E
FRAME 5

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

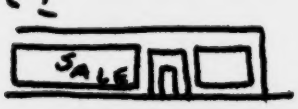
# SOURCES OF EMPLOYMENT

IT IS OFTEN IMPORTANT TO KNOW WHERE A PARTICULAR KIND OF WORK IS DONE. ANY SKILL MAY BE USED BY A WIDE VARIETY OF EMPLOYERS. THIS PAGE SHOWS WHERE MOST WORKERS IN THIS FIELD ARE EMPLOYED.

☑ GOVERNMENT — Government agencies.

☐ AGRICULTURE

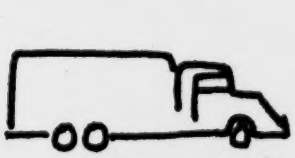
☑ SERVICES — Data processing centers.




☑ TRADE — Large retail stores.

☐ CONSTRUCTION

☑ FINANCE & INSURANCE — Insurance companies; banks.



☑ TRANSPORTATION & PUBLIC UTILITIES — Public utilities.

☑ MANUFACTURING — All kinds of manufacturing firms.

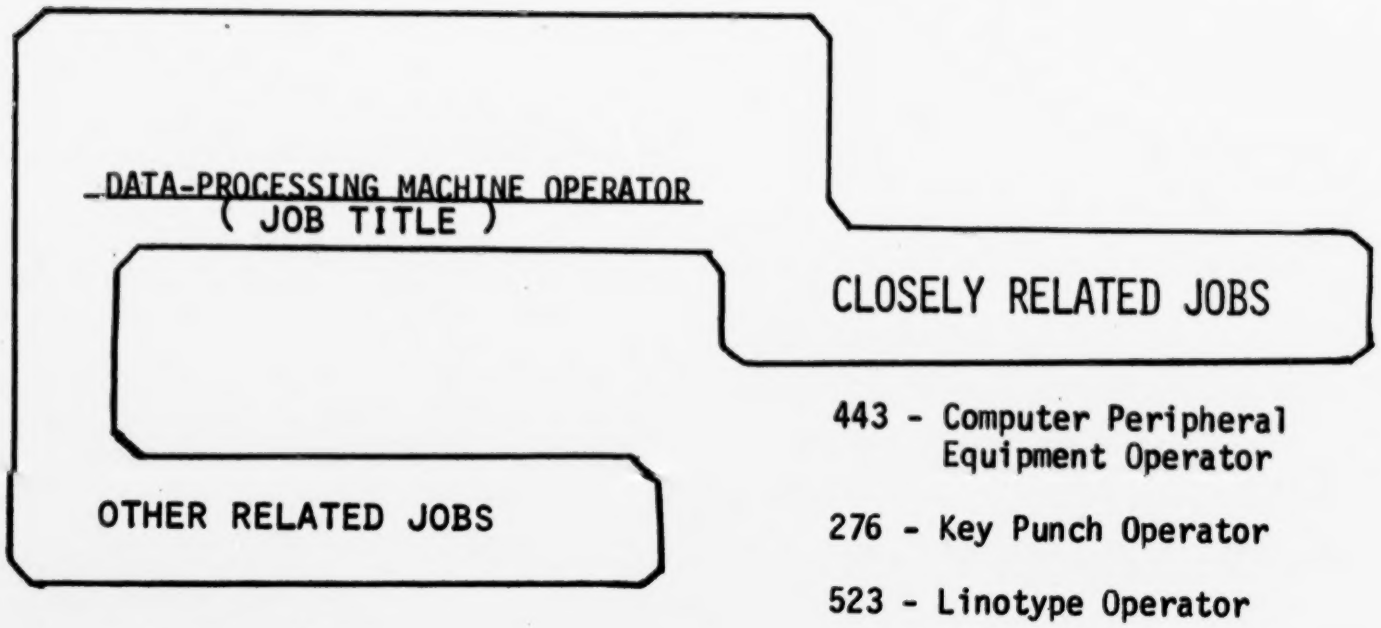
☐ SELF - EMPLOYED

TO CONTINUE
E 6 NEXT PAGE

ROW E

FRAME 6

LIKE PEOPLE, JOBS MAY BE GROUPED INTO FAMILIES AND MAY BE RELATED TO EACH OTHER IN A VARIETY OF WAYS. YOU MIGHT BECOME INTERESTED IN MANY OTHER JOBS.



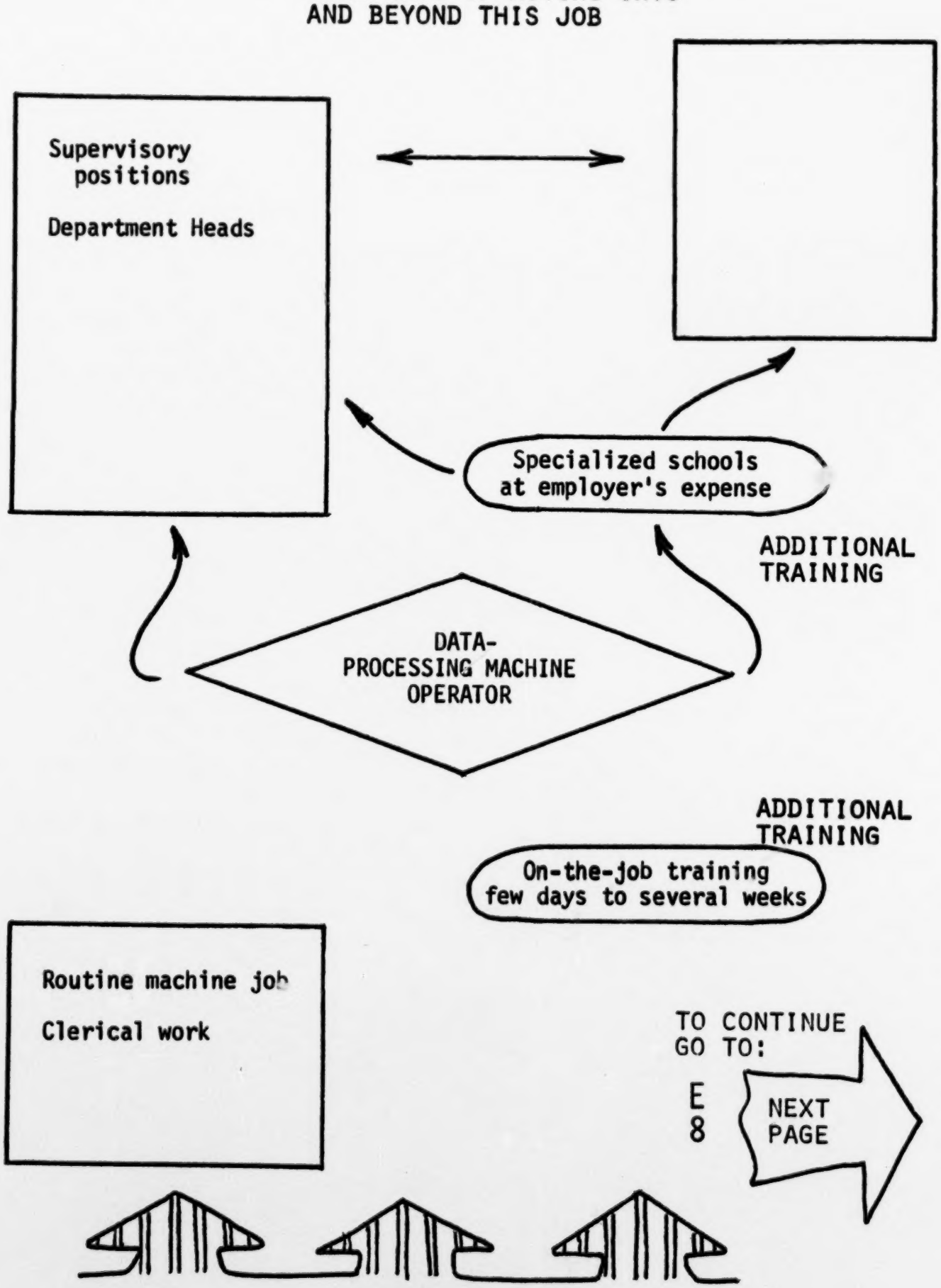

CONTINUE TO E/7 NEXT PAGE

ROW E
FRAME 7

DATA-PROCESSING MACHINE OPERATOR

(JOB TITLE)

SOME WAYS OF MOVING INTO AND BEYOND THIS JOB




TO CONTINUE GO TO:

E 8 NEXT PAGE

| ROW | E |
|---|---|
| FRAME | 8 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

## INTERESTS

A WORKER IN THIS JOB GENERALLY LIKES TO DO THE THINGS THAT ARE CHECKED BELOW:

☐ Likes working with objects or things such as machines, tools, or numbers. (THINGS AND OBJECTS)

vs.

☐ Likes working with people and communicating and exchanging ideas. (PEOPLE AND IDEAS)

☐ Likes performing activities that involve business contact with people. (BUSINESS CONTACT)

vs.

☐ Likes performing activities that are scientific or use practical knowledge. (SCIENTIFIC AND PRACTICAL)

☑ Likes performing activities that are set up and planned; that are clear and easy to follow. (ROUTINE AND ORGANIZED)

vs.

☐ Likes performing activities that use the mind to think of new ways of doing things. (CREATIVE)

☐ Likes working with people and helping them for their own good. (HELPING PEOPLE)

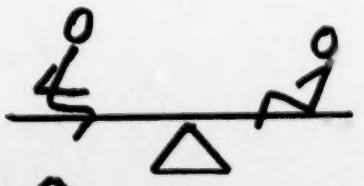
vs.

☑ Likes doing a job without the help of others; using machines, special work skills. (WORKING ALONE)

☐ Likes performing activities that make him important, and make other people respect him. (FEELING IMPORTANT)

vs.

☐ Likes making a product where he can see the results of his work. (PRODUCTIVE SATISFACTION)



FOR MORE INFORMATION ABOUT THE CHECKED INTERESTS, GO TO D 8

OR

IF YOU WISH TO LOOK AT WORKER CHARACTERISTICS, GO TO E 9

| ROW | E |
|---|---|
| FRAME | 9 |

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

## WORKER CHARACTERISTICS

EVERY JOB HAS DIFFERENT SITUATIONS THAT A WORKER MUST HANDLE. THE MOST IMPORTANT SITUATIONS FOR THIS OCCUPATION ARE CHECKED.

☐ Doing a job with many different tasks. These may change often or several things may be going on at the same time.

☑ Doing a job where the duties are always the same, always happen in the same order and are done only one at a time.

☐ Taking orders from other people. The worker will have very little chance to make decisions for himself.

☐ Planning, directing and controlling a whole job. Leading other people by giving instructions and orders.

☐ Working and cooperating with people in order to do the job. Meeting people and gaining their confidence.

☐ Persuading and convincing people to a point of view about ideas or things.

☐ Working under pressure. Remaining calm in emergencies, or unusual or dangerous situations.

☐ Making choices from several alternatives based on personal knowledge and direct experience.

☐ Making up his own mind about information according to set rules. Will have to run tests to make sure he is right.

☐ Using his own ideas rather than the ideas of other people. Doesn't mind being different.

☑ Following instructions correctly and exactly. Strict attention must be paid to details; little room for error.

FOR MORE INFORMATION ABOUT THESE CHARACTERISTICS, GO TO D 9 OR LOOK AT PHYSICAL ACTIVITIES AND WORKING CONDITIONS, GO TO E 10

| ROW | E |
|---|---|
| FRAME | 10 |

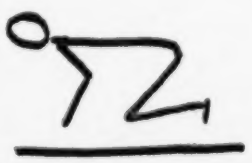
DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

UNDER WHAT UNUSUAL CONDITIONS DO PEOPLE WORK? (Look at boxes that are checked)

- [x] Inside
- [ ] Outside
- [ ] Inside and outside
- [ ] Cold; sudden temperature changes
- [ ] Hot; sudden temperature changes
- [ ] Very wet or very humid
- [ ] Very noisy or much vibration
- [ ] Hazards (examples: mechanical, electrical, explosives, radiation, exposure to burns
- [ ] Fumes, odors, dust, poor ventilation, poisonous conditions

WHAT SPECIAL PHYSICAL ACTIVITIES ARE NEEDED? (Look at boxes that are checked)

- [x] Strength (lift, push, pull)
  - Very light
  - ✓ Light
  - Medium
  - Heavy
  - Very heavy



- [ ] Climbing, balancing
- [ ] Stoop, kneel, crouch, crawl
- [ ] Reach, handle, feel, (arms, hands)
- [ ] Talking, hearing
- [ ] Seeing (includes color vision, depth perception)

CONTINUE TO E 11

NEXT PAGE

ROW E
FRAME 11

DATA-PROCESSING MACHINE OPERATOR
(JOB TITLE)

WHAT ARE THE CHANCES OF YOUR GETTING THIS JOB?

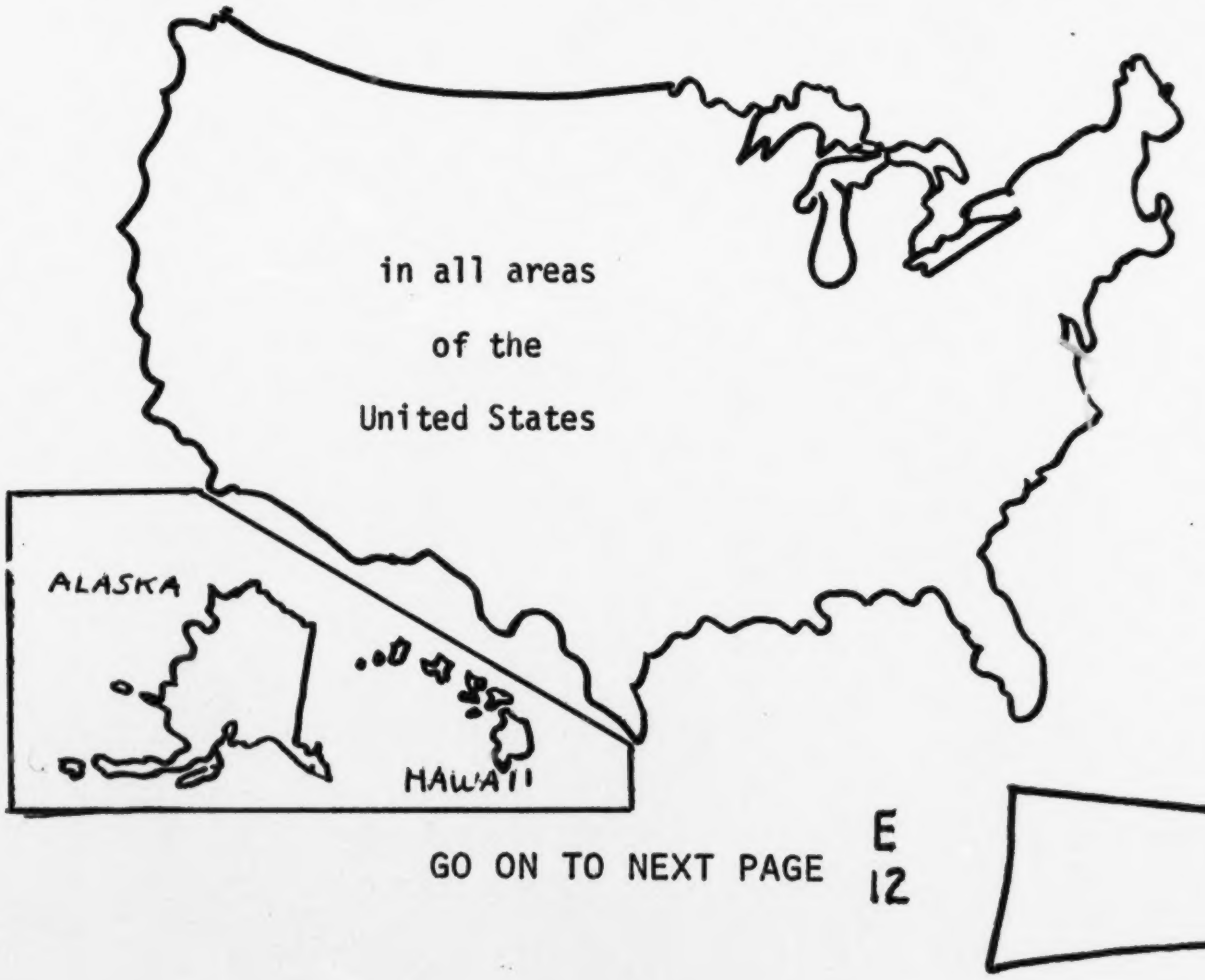
QUALIFIED WORKERS MEET:

- ☐ Much Competition
- ☑ Average Competition
- ☐ Little Competition

NEED FOR QUALIFIED WORKERS IS:

- ☑ Great
- ☐ Moderate
- ☐ Little
- ☐ Decreasing

THE GREATEST NUMBER OF PEOPLE IN THIS JOB ARE EMPLOYED:




GO ON TO NEXT PAGE E 12

| | |
|---|---|
| ROW | E |
| FRAME | 12 |

THIS IS THE LAST PAGE

THE FOLLOWING QUESTIONS MAY HELP YOU TO REMEMBER WHAT HAS GONE BEFORE. AT THE END OF EACH QUESTION YOU WILL FIND THE FRAME WHICH COVERS THAT TOPIC.

- What are the different ways possible to train for jobs? (C-3) (C-4) (C-5)
- Where can you go to read about or hear about jobs in which you are interested? (D-1) (C-7)
- What are the different kinds of interests found in jobs? (E-8)
- What are the different worker characteristics important in jobs? (E-9)
- What are the different kinds of employers? (E-5)
- What kinds of physical demands or working conditions are found in jobs? (E-10)
- What are the opportunities for employment? (E-11)

YOU NOW KNOW SOMETHING ABOUT JOBS AND JOB SELECTION, BUT YOU HAVE MORE ABILITIES AND INTERESTS THAN ANY GROUP OF JOBS CAN SHOW. SO THINK THESE THROUGH:

- What might be the differences from worker to worker holding the same job?
- What might be the differences from employer to employer when the job title is the same?

AS YOU THINK ABOUT THESE THINGS, YOU MAY FIND IT HELPFUL TO CONSULT WITH YOUR GUIDANCE COUNSELOR.

# Appendix C

ROCHESTER CAREER GUIDANCE PROJECT

(Overview)

Since it began in 1967, the Rochester Career Guidance Project has attempted to improve the quality of guidance activities in our schools.

This project has been supported by the Bureau of Guidance of the New York State Education Department, the New York State Employment Service, the Divisions of Vocational Education and Guidance of the Rochester City School District, and the Eastman Kodak Company.

My name is David Youst, and as Project Director, I'd like to share with you some of the thinking that has gone into the project, as well as some of the results that have come out of it.

The project originated in the guidance division of the Rochester City School District, and the work is still centered in this area.

The New York State Employment Service and the Eastman Kodak Company asked, "How can we help?" Their responses to our

requests have been substantial. We began by using industrial expertise to help us to define our problems and some of our objectives. Modern technology and equipment, "Information Services" and "systems approaches" have been applied to help provide better guidance programs.

There were three general overall goals of the project: The first, to provide the students with whatever relevant information he might need while trying to make decisions about his career possibilities. Hopefully, the content and the media used should motivate him to continue his inquiry.

We also wanted to increase the degree of control which a student feels for his subsequent development. We wanted him to really become involved in career exploration, not just be a passive on-looker.

And we wanted him to relate his school world to the career world in a way that would mean something to him.

We've asked ourselves such questions as: How can we individualize the process of career exploration? What methods are most effective in helping students bridge the gap between school and the "real" world and how can the community best be involved? What media will be most effective in carrying out specific guidance functions, such as displaying occupational information? To what extent can the principles of "information systems" be implemented in a school guidance setting? In what ways can students participate actively in activities such as simulation and CAI response and control plus several other areas that I'll discuss in just a few minutes. And another very important question, what are the most effective ways of providing support for the professional development and functioning of "on-the-job" guidance counselors?

As you might expect, in actual practice, questions are raised far more frequently than they are resolved. However, if any generalization can be made as a result of our work thus far, it is that current career guidance practices can be vastly improved, even without adding such things as computers or audio-visual equipment. But with the proper equipment we feel that improvement can be tremendous.

However, the hardware, content, and media must fit into a program designed to meet specific objectives with specific populations. All too often in the guidance world, little long-range planning is attempted, let alone implemented.

The Career Guidance Project has attempted to build all of its activities around specific observable objectives. We determined to be absolutely clear in what we wanted to accomplish. First, we addressed ourselves to the problem of handling existing information, then

moved on to experiment with new materials and recently have become more concerned with increasing the direct involvement of students in career exploration.

Let's briefly discuss several specific projects. We'll go into greater detail in these in subsequent slide presentations. One of these is called the Micro-Image Project. We have tried to improve the dissemination of existing career information. This information has been rarely available to a given student at any one place. Therefore, we decided to assemble all pertinent printed information for each of 600 job titles; information from unions, employers, military, sample high school programs, colleges and schools, names of people to contact in the Rochester area, possible part-time jobs and other sources including career fiction, biography and A-V materials.

The next step was to microfilm this material in a controlled format, one that would make printed copies possible. Experimentation has been going on continuously to try to determine the strengths and limitations of using this medium with students. Color microfilm, for example, is now a reality.

The third step in this Micro-Image Project was to develop a computer access system that would be compatible with the use of microfilm. The computer can generate suggestions for further student exploration or direct a student to a specific page of information or, in fact, retrieve the page and show it on a screen. Microfilm will also permit a teacher, parent, counselor, or student to scan available information on the basis of job titles or field of work.

Information must be available in an emotionally acceptable form when the student is ready. Printed material

just does not meet this criteria often enough with individuals in an urban setting.

Another area of activity was the development of our Life Career Studies. These studies have been developed to have maximum impact in Rochester. They are slide-tape stories of people at work and at home. Each job is represented by at least three people, one of whom is usually a woman and another a member of a minority group. In addition to providing role models, the materials attempt to convey samples of the kind of decisions workers are faced with on their jobs. Each person's history and future aspirations are described to provide a sense of career development throughout life.

The biggest limitation which materials of this type have is their development by job title. Students have concerns about the outside world and these take many directions. An audio-visual data-base can be built

systematically and still account for individual differences among students.

In our project, Individualizing Career Exploration, we are using student photography as a catalyst to motivate exploration, facilitate communications and learning, and to build a visual data base which other students may then use.

There is a fourth project activity which is not as far along as are the other three. This is the Multi-Occupations Laboratory which has been under development by the Division of Occupational Education. This special experience center combines a career information service with direct student activities on real equipment.

Along with these four project activities, we have been trying to support school counselors by providing stimulation, community contacts, equipment and materials, etc., to help them

continue their in-service development and functioning.

These, then, are what we might call our five major areas of activity and, as I mentioned earlier, the first three are covered in much greater detail in other slide programs. Actually, there are thousands of ways of involving students directly. The development of such activities awaits only leadership in educational guidance. Certainly the current state of educational technology places no serious limits on what <u>can</u> be attained in schools at present.

# Appendix D

COMPREHENSIVE CAREER INFORMATION

Micro-Image File

During the spring of 1970, our staff on the Career Guidance Project put into operation an Occupational Information System that is really getting results; and the enthusiastic acceptance that it has received has been very gratifying to all of us.

Briefly, it's a system for locating and retrieving occupational information quickly and easily, and one that can be used not only by counselors, teachers, and other educational personnel, but also by the students themselves.

This Occupational Information System is now in operation at two locations in Rochester, New York: the Frederick Douglass Junior High School and the Career Experience Laboratory.

However, before we describe this program and tell how it works, let's go back briefly and look at the logic behind it - the thinking that led us to this particular line of reasoning.

One of the major areas of activity of

the Rochester Career Guidance Project has been the improvement of current information in the field of career guidance. This general area of activity can be further divided into two general categories: the first part relates to the information that is available and needed by students engaging in occupational exploration; the second is concerned with the methods of providing access by students to this material.

We began by asking a series of questions, and these questions guided our initial investigations of information systems:

> What occupational information should be available to students at various ages?
>
> What systematically developed materials now exist?
>
> What are the expectancies of information dispensing activities as they now exist?
>
> What are the actual outcomes of such activities?

Even a casual examination of the activities in almost any guidance office quickly reveals a rather haphazard system. Although it seemed desirable to us to have all information which a student could use, available to him,

certain limitations are quite evident. Books, newspapers, booklets of various sizes, audio-visual materials in several formats, etc. cannot easily be organized in one place.

We also noticed that certain information which is quite regularly provided by some guidance counselors is not available systematically for use by others; for example:

> What are the best high school programs to take to prepare for a particular job?
>
> What electives make the most sense?
>
> Who employs people in any given field?
>
> What are other sources of information relating to a specific job, such as career biography or career fiction?

In addition to these questions, we had to consider several other variables in the development of a Comprehensive Information File:

> In what sequence should the materials appear?
>
> What limitations does reading level place on the materials?
>
> How can these materials be systematically updated?

How can use in remote decentralized locations be provided?

Can graphic display techniques facilitate the use of printed materials?

We found that certain occupational materials that were available from commercial sources could be unified according to occupational title; for example, material from sources such as The Occupational Outlook Handbook, DOT, and commercial publishers such as Science Research Associates. We also found that when we got together all of the information available in the various forms, such as books, pamphlets, etc., we had well over six hundred job titles. The question now was how to keep all of this information in one place and in a form that was as easy to use as possible. Not only should counselors have ready access to this information, but it should serve as a resource for teachers and other educational personnel. Students should also be able to get the information they need

easily and effectively, and, hopefully, they should enjoy the experience.

After considering several configurations of library information equipment, the Career Guidance Project staff settled on microfilm as the media with the greatest potential for solving our problems.

The microfilm system that we used first was the Recordak Dekastrip. Briefly, here's how it works.

The user refers to one of three occupational indexes to locate the file number of the strip he wishes to explore. One index lists the job alphabetically; the second index groups jobs by six digit DOT number; and the third clusters jobs according to personal characteristics associated with the job.

He then pulls the stick from the honeycomb file and inserts it into the reader-printer. Next, he dials the appropriate strip and then slides a scanner which controls the appearance of pages on the screen. And if he wants a copy of a particular page, he presses the print

button and receives one in a few seconds.

This Dekastrip system has been used successfully and with apparent ease by sixth, seventh, and eighth grade students, and with a minimum of instruction.

Recently, however, we have been working to develop a format to be used with a microfiche system. This system provides much greater flexibility. Briefly, here's how it works. On a piece of microfilm approximately 4" x 5½" in size we are able to record sixty photographs in black and white or in color. This means, for example, that we could have sixty pages of information in this one piece of film; and, incidentally, this same sixty-image format is now used by most library systems as well as by other agencies, such as the ERIC or Educational Resources Information Center. Thus, by standardizing on this format we have a way of quickly and easily utilizing material

from other sources too.

With its five vertical and twelve horizontal columns, it provides rapid branching that was not possible before. The person using it is able to move directly to any one of the sixty pieces of information simply by moving the indicator to that specific area on the file. And, printed pages of any of the sixty sections are available just as quickly as they are with Dekastrip.

Actually, of course, material from many sources - publishers, employers, schools, libraries, etc. - could be updated, copied onto a master roll, and printed onto a regular roll of microfilm, onto Dekastrip, or in the form of the microfiche sheet film. In this way various users, such as schools, youth corps, libraries, industries, and employment agencies could use whatever form of microfilm they desire. We feel, however, that for career guidance within the school itself microfiche is probably

the best answer.

Since we anticipate several kinds of users, we've designed our own microfiche with a double index. Some people, for example, might want to go through most of the information about a given job; but others might only want a specific bit of information.

Each microfiche has the title at the top of the first vertical column; and, of course, it's also step Number 1 of the top row. In the second horizontal area are the directions that you might take. Notice that here there are two arrows. You might decide to proceed directly to the briefs which are in Row B; or you might decide to go to the third step in the horizontal index, which would provide a job description. Step 4 tells what the briefs are. Here again you might decide at this point to read the briefs or to proceed to 5, 6, and 7, which are the educational requirements. Step 5 relates to the high school courses; Step 6 to education after high school -

college, apprenticeship, on-the-job training, etc.; and Step 7 deals with such things as clubs and volunteer work that relate to the job. The eighth area deals with sources of employment; while the ninth is concerned with other jobs that are related to this particular job. Ten gets into job ladders. Where does this job fit into others around it and where does it lead to. In eleven, such things as interests and worker characteristics related to the job are considered and the final area of the horizontal index goes into other sources of information, such as career fiction and career biography. From any of these steps 8 through 12, the user might be referred to Row D which is "Other Sources" of information, or Row E, which is other job data.

A user might want to skip the briefs and go directly to the educational requirements for that job. He would then go directly to Row C. C-2 gives an overview of the educational material in the file; C-3 gets into general high school

requirements, and if this job requires a college education, he might wish to look at D-3 for this information; then back to C-4 and 5. Again, he might go to D-5 for some post-high school courses, or to C-6 and 7 which would give him other types of information, such as other areas to look into or things to do.

Thus, the same microfiche can be used by a person the first time he looks into a job where he can be given a step-by-step direction, and also the more experienced person who can go directly to the type of information that he wants. The pilot version will be in operation at fourteen "stations" in Rochester during the 1970-71 school year. All of this material was pulled together in only two months by fourteen people working on a crash program about twenty hours a week. Six of these were employment personnel from the New York State Employment Service; six were guidance counselors from our

public school system; and two were librarians, also from our public schools.

Here are a few of the very interesting and gratifying results that we've had in using a partial microfilm system at the Frederick Douglass Junior High School. First of all, the setup at this school is ideal. The readers and reader-printers are located in an area which is readily accessible to the students; and not only do they have easy access to the equipment, but there is also a full-time paraprofessional on duty manning the machines and helping them whenever they need it.

On march 4, 1970 we began a survey of student's reactions to the file at Frederick Douglass Junior High School. Here are a few of the results for the first six weeks of the survey:

> 615 students have used the machine during the six-week period. 449 of the students were boys and 264 were girls.
>
> About 2/3 of the users were in eighth grade - the others in seventh.
>
> Of those who had used the system more than once, boys tended to return more often than we would have expected and significantly more often

than girls; in fact, at a ratio of about 2:1.

92% of the users pushed the button to produce a copy of something in the file. Indications, based on more than 200 follow-up interviews, are that approximately 90% of the students told their friends or parents about using the file and showed them the copies of materials they had looked at.

We find that over one-half of the students are spending more than twenty-five minutes each time they use the file. These results are very encouraging.

It seems to us that the students are getting some very worthwhile results from the microfilm approach to career guidance information; and they're also enjoying the experience and are coming back for more.

Of course, the work isn't finished. Much is still to be done. No one knows how students will react to the newly completed file.

We have 19 reader-printers scheduled for Rochester and surrounding areas for next year. Also, a great deal of work remains to be done on making the

printed material as graphic and as pertinent as possible.

We do feel very gratified about the results of this project so far, and see a very optimistic future for it. Our conceptions of what kids want or don't want, will do or won't do, have been proven entirely wrong. They want to be part of the action. They want to find the answers for themselves; and we on the Rochester Career Guidance Project staff feel that the Micro-Image File is helping them in this direction.

# Appendix E

# CAREER EXPLORATORY EXPERIENCES

When you stop to think of it, the student in junior high or high school doesn't have much going for him when he wants to find out what the world of work is really like. First of all, whatever material that is available on a specific job is usually in printed form only - which, in itself, is enough to turn off many kids. Then, add to that the fact that it's at least a year or two out of date. And actually, it's apt to be more like three or four years behind the times. At best, it's not too realistic and certainly not overly exciting. It's merely another way of "telling" him - he had no chance to see the job and try it on for size.

Kids quite often express a desire to experience this work-world for themselves - to sample various jobs - to get the feel of different occupations. Normally, this isn't practical. The outside world of industry is not structured this way.

However, there is an alternative - and that alternative is to simulate this world of work. That's precisely the function of the Career Experiences Lab. It's a place where a student can try various jobs - where he can see what it's like to tear down a transmission or to work at commercial art. It's a place where he can really experience the work situation the way it is "on the outside."

Toward the end of September in 1968, a project, which should have a tremendous future potential, was sponsored by the Rochester City School District - Department of Occupational Education. This is our Career Exploratory Lab. It is located at the Main Street Annex for Occupational Education in Rochester, New York, and the reason we feel that this project should have a bright future is that it is a place where a student can actually try various types of occupations with no risk of failure. He can have a real "hands on" experience and can experiment with various

interests at his own speed. The overall goal of the Career Exploratory Lab is to help him gain greater self-control over his future development.

The lab was set up to provide experiences for career exploration through the use of real equipment, counseling services, and career information. It's designed to develop a variety of realistic activities and information that will encourage students to become involved in occupational and educational exploration.

Briefly, here's how it works - the Exploratory Lab is divided into two rooms, each with a separate and distinct function.

In one of these rooms, there is a microfilm file, similar to the one in use at Frederick Douglass Junior High School. It will be used in much the same way and will serve the same purpose as the one at Douglass. However, in addition to the microfilm file, there are many other sources of career information in this same location also available. There are

vocational tapes, sound filmstrips, motion pictures, as well as other career information in encyclopedias, books and pamphlets. In addition, the staff is currently developing slide-tape presentations in areas that students request most frequently. Exploratory packets on many occupations are also being developed. The staff, incidentally, is composed of two very capable persons - Miss Sandy Freedman, a guidance counselor, and Mr. Richard Emerson, an instructor.

In the other large area adjacent to this information and orientation center, there's an equipment center. The many pieces of basic equipment represent career fields ranging from food service to metalworking, beauty care, electricity, horticulture, printing, health careers, business, and from fabric care to auto mechanics. The use of this actual on-the-job equipment helps a student get a feeling of what it's really like to perform various types of work. In many cases, industrial or business visits

are also arranged to provide opportunities for students to see the actual work sites, talk with workers, and explore interest areas which are impossible for us to simulate in the Lab.

Between the time it opened in September of '69 to June of '70, some seventeen hundred students have been referred to the Lab and have utilized the facilities. Although the majority of these students have been eighth graders, they have ranged from the sixth grade through seniors. Referrals have included potential drop-outs, discipline problems, and physically handicapped, as well as the many well-adjusted students.

When a student is referred to the Laboratory, he meets with the counselor for a basic orientation to the program. During this initial session, the counselor tries to get an idea of the various areas of interest of the student, who is then directed to activities that appear to be most appropriate for his

own interests. Of course, the basic skills involved may be applicable to a variety of similar occupations. The program is unstructured, and no student is forced to continue anything in which he loses interest. He also has the freedom of moving between the information center and the experience center at his leisure. All pressure, except purposeful activity, is eliminated. The student is encouraged to express his personal feelings about what he is experiencing. Failure shouldn't be possible. He should have an experience and then relate in some fashion to this experience.

Schematically, the process might look like this. When the student has become acquainted with the possibilities in the Lab through his initial interview and guidance orientation, he may decide to go to the information center, or it may be the activities center. There's no referred way - no right or wrong. In either case, after he completes his experience here, he will consult with

the guidance counselor. He may or may not decide to investigate the other type of activity. He may, for example, have no desire to look into the information area. This is up to him and the counselor. Or, he may find that he has no interest in this particular field and decide to change his field of investigation. And when he decides to end this particular session at the Lab, he goes through a summary and evaluation with the counselor, of what he has done and what his experiences have been.

The student should have the opportunity of coming back to the Lab for further explanation and experiences in areas in which he is interested. The first time he attempts something in the activities center, for example, he may spend only five minutes in the very basics of this activity. His experience at this point would be in the simplest terms. However, if he desires further information or experience, he would go into this activity in greater depth, possibly for ten to twenty minutes.

Finally, he would explore his field of interest in even greater depth. Time-wise, this might last from 1/2 hour up to 2 hours. At this third stage, it should be a very realistic, lifelike experience. When he finishes this third experience, he should really know the field that he's investigating in enough depth to make some quite intelligent decisions about his possible place in it.

The completion of these three general levels of activity and experience, then, should take him from the very basic contact to a much more mature understanding of his area of interest. The goal of his use of equipment is his "trying on" various rolls at several levels. He should come to realize that he could successfully handle many different tasks and jobs. And again, nowhere along the line should failure be possible. He proceeds at his own speed and has counseling available to him all along the way. The decisions are his and are

not those of a teacher or counselor telling him what to do at each step; however, an evaluation and summary between him and the counselor should occur before he moves on to the next higher level of experience.

While all students who enter the Career Exploratory Lab should have a broadening rather than a limiting experience, it's crucial that those students without sufficient self-direction be "guided" toward understanding the ways in which the work-world can be structured. Workers on the same job are different from one another. People with the same job title working for different employers sometimes do quite different things. The "hands-on" lab experiences must be designed to relate to the actual job. While this is difficult to do, it is not enough to reassemble a carburetor, and then decide to like or not like auto mechanics. Bridging this gap will take time.

The ways of working with students in this experimental guidance center are, of course, critical. However, the ultimate value of the Lab will depend on how well the student gets a "feel" for the real world of work. The student should always be made to feel like an individual - unique in his strengths and interests. He should make his decisions for his own development to whatever degree this is possible. We feel that beginning level of experiences, in particular, should produce a high level of stimulation. They should be novel and variable and increase his curiosity. And these initial experiences, as quickly as possible, should be "hands-on." The student should never be forced to sit and listen to extensive lecturing; rather the activities and processes should be self-instructional to the extent that at least ninety percent of the students should clearly and quickly comprehend

the directions. And of course, confidence must be generated. The student should understand that the Lab is not a spy center designed to feed personal information about him back to his own school.

Although extensive records of student reactions and feelings are not being kept, home-school counselors have reported very favorable accounts of student visitations, emphasizing such things as higher motivation in school achievement and greater interest in further career exploration.

We visualize the possibility of meaningful activities in the Career Exploratory Lab starting at a much earlier age than Junior High School. Some form of career information and experiences should start at the pre-school level and continue on through high school - with the individual gaining increasingly greater insight into his capabilities and interests as he progresses through

his school years. And this concept, it seems to us, has tremendous merit and possibilities - particularly when you contrast it with the virtual lack of career-exploration that students have had the opportunity to participate in up to this point in time.

Appendix F

INDIVIDUAL CAREER GUIDANCE

KIP-II

Take a kid - add media, like a camera or tape recorder, help him define a career problem - and some very interesting and worthwhile results are usually forthcoming.

At least this has been our experience in the area of Individualized Career Guidance. Or as we call it KIP - Kids in Process, second attempt. As with all of our other areas of endeavor, we have found that when the students really get involved - when they're part of the action, things happen.

Here's what we've been doing in this field of individualizing career guidance. Again, it's geared to getting the student out into the other world - the real world of work - and to find out for himself what it's really like - to see and record life on the job. Although we've found that slides and an audio tape work extremely well, the

media itself is not the final product - it's used merely to facilitate the process. Fortunately, students seem to enjoy the mechanics of taking pictures and making sound tapes. And although they do get a kick out of the photography, itself, the primary purpose for using it is to help the student crystallize his experiences. He uses the camera primarily as a tool. And actually we have found that we don't have to work with only one student at a time. Two or three students, cooperating as a team, seem to function very effectively.

In general, here's the way KIP-II model works:

Once the student is interested, we get from him what amounts to a verbal contract. It's a commitment on his part to follow through on the project. We don't want him to just drop it whenever he feels like it. The contract is a two-way street, however, and we promise to follow through too. He should

know why the school supports KIP-II and what each has to gain and lose.

Secondly, the specific relevant problem that he's going to investigate must be identified. The problem itself is one suggested by the student. Fifteen minutes of discussion is usually enough to produce a very specific written statement. The problem should be limited in scope but pertinent - one that's of genuine interest to the person or persons investigating it. We've found here that quite often, the questions asked by younger kids are different from those asked by high school students. For example, we've had questions from the younger group along the lines of "What is Xerox"? or "Why are science and math always hooked together in schools"? We've given some of these students the opportunity of talking with scientists in order to let these men tell how they use math in their areas of endeavor.

The older students in high school seem to be more job-oriented. Usually they want to look into specific types of occupations. Whatever the case, this area of investigation by the student should be relevant and should be specific.

Next, a plan of people and places to be visited is made by the educator, an employment service staff member, and the student working together. If the student is not actually involved in the making of the plan, he at least should approve it.

The employment counselor or the educator makes the contacts with the places to be visited. The purpose of the visit must be specified for the employer. Written confirmation of dates, times, and proposed activities should be made with the employer. In general, at least one employee should be visited in depth at each work site.

The next step is to issue the camera and film to the students. Instructions are given on their use and at least two

days are allowed for a practice roll to be taken. Recent work has suggested that practice with an unloaded camera can work well.

The volunteer, who will assist the student, is introduced to him. The relationship between the student and volunteer is structured during this meeting with the educator and a schedule of visits is detailed.

The student and volunteer, following the mutually agreed-upon schedule, visit the area where the student interviews and photographs the person or persons at work. Although the volunteer does not suggest specific photos to be made, he makes certain that the major points of interest are covered. The student must assume the initiative for gathering the information.

Immediately after each visit, the volunteer helps the student review what occurred and what the student learned. This "de-briefing" conversation is recorded on audio-tape or in writing, and after the final visit and debriefing, a summary is made.

After the film has been processed, the slides are next edited. A person with some experience in editing may help him at this point. A slide-audio unit should be developed around the question that the student was attempting to answer, but written script should not be encouraged, unless the student wishes to write one. Failure should not be possible. The unit is assembled in it's final form. During this stage, additional support from the editor will probably be necessary. The student may need some additional guidance in the organization of his materials and ideas. And, although techniques of audio-visual communication can be introduced to the student, the content should be his alone. The student is also encouraged to communicate what he saw and learned to others in his age group.

And finally, the educator and the student review the relevance of all of the previous activities. The evaluation and summary might very well lead to other areas of problems which the student would

want to explore next.

At the present time, there are about ten of these projects in operation. Let's look at one or two examples:

Procedures such as this can be modified to suit any school situation. Expensive equipment is not required - but creative guidance is.

# Appendix G

LIFE CAREER STUDIES for X-RAY TECHNOLOGIST

(RADIOGRAPHIC TECHNOLOGIST)

The following Career Guidance materials will allow you to see the job of X-Ray Technologist through the eyes of four people:

Mr. James Green, Chief X-Ray Technologist in two private clinics,

Mrs. Donna Thomas, X-Ray Technologist at an industrial location,

Mr. Louis Wolfanger, Chief X-Ray Technologist at a County Chest Clinic,

and Miss Joyce Forbes, a student Technologist at a General hospital.

The first section will show you the things that <u>most</u> X-Ray Technologists do on the job, and the second section will describe the kind of work done by each of the four people already mentioned.

The people you have been introduced to are diagnostic medical X-Ray Technologists. Some other X-Ray Technologists are employed by industries where x-ray pictures are taken of industrial equipment like big tanks or boilers. The Technologists must determine whether the equipment is

strong enough to be delivered to the customer. Radiation therapy is another job in the medical field where radiation is used to help cure people of certain diseases, usually cancer. However, this Life-Career study is about the field of diagnostic medical x-ray. Radiologic Technologist is the correct job title, although most of us still use the term X-Ray Technician from habit.

The kind of work produced in this field is an x-ray picture of some part of the body which cannot be seen with our eyes alone. The final x-ray might show a broken bone, tuberculosis in the lung, or some kind of blockage in a small intestine or stomach.

The process begins when a doctor requests that one of his patients be x-rayed. Let's suppose that a man has fallen and landed on his hand. Because of continuing pain he goes to the doctor, but the doctor cannot tell for sure

whether a bone is broken. The doctor requests that an x-ray be taken, and the patient then goes to an x-ray department. When the Technologist in an x-ray office or department gets a request for an x-ray of the hand, it means a very specific thing. The Technologist's job is to get a patient into the correct position for three, or perhaps four, different x-rays. One would be taken with the hand in a flat position; another with the hand turned on its side; and the other views would be taken with the hand in a slanted position, (oblique). If a patient is in a great deal of pain, or if he cannot be moved easily, the job of the Technologist becomes more difficult. He must make the patient relax and be comfortable so the patient will stay as still as possible while the x-ray is being taken. The Technologist puts the patient in the correct position,

and sets up the x-ray equipment; that means deciding on how much radiation is needed and how much of the patient's hand should be exposed to radiation. Usually the Technologist measures the thickness of the part of the body to be radiographed and then adjusts his machine for the proper settings. Next, the X-Ray Technologist gets behind a lead shield, or wears a lead apron, always protecting himself from stray radiation from the machine. The patient must hold perfectly still while the Technologist pushes the button and actually takes the x-ray.

Once the x-ray has been taken, the Technologist takes the cassette or film holder into a darkroom. He removes the film and puts it into the automatic developing equipment. The patient is escorted to the dressing room or to the waiting room and is usually asked to wait for a few minutes while the x-rays are developed.

Some parts of the body do not show up easily under normal x-ray conditions. For these kinds of x-rays the Technologist has an extra job to do; that is to administer a contrast medium. A contrast medium is just a material that does not let x-rays go through easily - it therefore shows up clearly on an x-ray plate. So, for instance, if a picture of the stomach is required, the patient may be given what is called a "barium milk shake." The Technologist very often mixes this barium drink and sees that the patient swallows the right amount of it. When the x-ray is taken, the stomach will show up clearly. Other contrast media are given, as barium enemas to show the lower intestines, or as injections to make organs like the gall bladder show up.

The X-Ray Technologist must also keep the equipment clean and in good working order, and keep records on the patients he has x-rayed. In certain kinds of exams the X-Ray Technologist works with a doctor

called a Radiologist (a physician who has specialized training in x-ray diagnosis and therapy). The Radiologist sometimes studies the functioning of certain parts of the body by watching a fluroscope machine. At certain times the radiologist asks the Technologist to take x-rays which are used for careful study after the fluroscope exam.

It usually takes two years after high school to prepare to be a Radiographic Technologist. There are more than one thousand schools of X-Ray Technology approved by the American Medical Association, and most of them are in hospitals. A few schools offer three and four year programs, and eleven schools award a four year college degree in X-Ray Technology. Also, many junior colleges coordinate academic training with work experience in hospitals in three year X-Ray Technologist's programs.

After training, a registry examination is given. When a student completes

the examination successfully he is called a Registered Technologist, and then the initials R.T. appear after his name. Registry and State licensing are required, and many technologists participate in professional associations such as The American Society of Radiologic Technologists. The materials which follow will tell you more about each of the four people you have seen on the job.

Jim Green is the Chief X-Ray Technologist for two private clinics run by a group of Radiologists. One clinic is located in the Medical Building downtown, and the other is in a new medical center south of the city. Jim spends about one-half of his time each week in each place and is responsible for the work of the four X-Ray Technologists in each place. In addition, he spends about three-fourths of his time taking x-rays of patients. Other job duties include keeping equipment in good order, supervising all records made by

technologists, and coordinating their efforts with the doctors who work in the clinic.

Jim is highly skilled and is sometimes called on when another Technologist has difficulties. In addition, he enjoys working with people in helping relationships.

Jim has lived for the past couple of years in a large house near West High School. Much of his career has been spent working weekends or some evening hours, and so now it is a real pleasure for him to be working straight days. His wife, Nettie, and children, Darryl, Bruce, and Pam, keep the house a lively place and when Jim is at home, he enjoys tinkering with his car, watching TV and sometimes playing his guitar.

Jim was born in Georgia and lived there until he graduated from high school. His mother and father moved the whole family north to Rochester,

and he obtained his first job at a hospital as a food service worker. He kept this job for about six months until he was 17 and then went to Kodak, where he was employed in the Research Laboratories. Jim worked near a department that made use of industrial x-ray equipment, and he became fascinated with what they did there. He thought about going to school to become an X-Ray Technologist, but was worried that he would not be able to get a job because of the discrimination existing at that time. Jim had the support of his mother and other people, so in spite of his feelings, he decided to go to school to become an X-Ray Technologist. He attended the University of Rochester's Strong Memorial Hospital training program for two years, and much of this time was spent working night call on a part-time job to pay his way through.

When he graduated, his fears were realized, and he did not get a job.

After a while he was employed part-time, but only at nights, at Highland Hospital. Finally after about six months he obtained a job full time as an X-Ray Technologist at Highland Hospital. Jim worked at the hospital for eight years and advanced to the highest technologist rate possible. For the last seven years, he has been employed as a Chief X-Ray Technologist in the two private clinics, and in fact, many of the doctors he worked with at Highland Hospital, he now works with in the private practice. Jim enjoys his job very much now, and plans, as he says it, to "stay put for the future."

Mrs. Donna Thomas works for the Eastman Kodak Company and almost all of her patients are well and walking. About one-quarter of her time is spent on dental x-rays, and since dental x-rays are very small, they cannot be processed by the automatic equipment. They are processed by hand by the X-Ray Technologist

and dried overnight.

She works closely with Mr. Francis Zimmer, and they share all the work at the Apparatus Division Plant. They both work 8 to 5 weekdays only. Donna usually begins her day with record keeping for x-rays taken the day before. How many patients, what kind of exam, and other information all need to be recorded. After some routine record keeping, Donna mounts the dental x-rays from the previous day's work. This means labeling them and getting them in a form for the dentists and doctors to be able to use. A fifteen minute break in the morning and afternoon and a one-hour lunch period are about the only times when Donna is not in motion. She has been with Kodak a little more than one year, while Mr. Zimmer has been there for more than 28 years.

All technologists wear radiation detectors which are checked every month to determine whether too much stray

radiation has been received. Because of her contact with the chemicals used in processing the dental x-ray film, Donna has had some difficulty with her hands. They are not always "silky-smooth" as in the soap commercials.

Donna and her husband, David, live in an apartment not too far from work. David also works for Kodak as a Lab Technician, and they both enjoy camping especially with their own small trailer. They are both extremely active in their church, and serve as youth workers many hours each week. At home they enjoy music, reading, and just plain relaxing. Sometimes furniture refinishing is a good relaxer too.

Donna grew up in a town in Pennsylvania and attended a hospital school of X-Ray Technology after she graduated from high school. She worked in her home town following graduation and stayed there a year until her fiancee, David, returned from service. They were

married and moved to Rochester where she worked at Rochester General Hospital for a little more than a year, before taking the job at Eastman Kodak Company. One of the reasons she left the hospital and went to industry was that the long hours, sometimes required at the hospital, interfered with her role as a wife, especially since David was attending part-time classes at R.I.T. But in many ways, she misses the hospital and the kind of activity there.

Donna anticipates keeping her job as an X-Ray Technologist in industry at least until she and David begin their family. At age 24, she is firmly commited to a future involved in the field of X-Ray Technology.

Lou Wolfanger works at the Monroe County Health Department Chest Clinic. The primary purpose of this clinic is to take chest x-rays which will detect tuberculosis. Lou is supervisor of a three-man team that does work related

only to tuberculosis, and while some x-rays other than chests are taken, the vast majority of the work done is chest x-rays.

Lou generally begins his day by matching up the previous day's films with their records. He spends about 3/4 of an hour getting these materials ready for the Radiologist. The clinic hours generally begin about 9 o'clock and they can process nearly forty patients an hour. Thursday is called "mass survey" day when up to 150 people move through within an hour's time. Lou does special x-ray exams such as ptomograms, and sets up equipment needed for anything other than routine examinations. He fills in when one of the regular Technologists is on vacation or otherwise not in service, and coordinates vacation times and working conditions. The equipment is extremely modern and uses photo-timers and reduced size x-rays. The film is

processed automatically, but equipment always needs to be kept in good working order and in a clean condition.

Lou is in daily contact with the Assistant Director of the Chest Clinic as x-rays are processed. In addition, he is responsible for making sure supplies are ordered ahead of time; that the budget is prepared appropriately one year ahead; and that his operating expenses stay within the budget for this year.

Lou has been at the Chest Clinic for ten years, and now works five days a week for seven hours a day - a 35 hour week. He lives well out of the city in a small town where he grew up and likes this kind of life for himself, his wife, Roseanne, and their four children, Lou Ann, Lyn, Kurt, and Kathy. Lately, the remodeling of his entire house has been a major project at home. At times the whole family gets into the act of planning new

kitchen cabinets, locations of sinks, walls and windows.

Lou enjoys golf, and the whole family likes to go camping, especially along the St. Lawrence River and State Parks.

Saturdays are work-days though, for Lou works at another job part-time as a Technologist on Saturdays and weekdays after regular hours.

Lou is 37 now, but got interested in the X-Ray field when he was only 18. He worked as a laborer at the Foster-Wheeler Plant when his manager asked him if he was interested in taking industrial x-rays. He said "yes", and for two years worked as an unlicensed Technologist before he got drafted into the service. In service, Lou got some immediate training in medical x-ray diagnosis, and spent his entire military hitch taking x-rays for the Armed Forces. When he was released from the military, he followed his interest in radiation, and went prospecting for uranium, but he

didn't hit a claim on his six month venture. When he returned he worked in construction for a time, and finally decided to run his own gas station, which he did for about 3½ years. Lou decided to return to the x-ray field due to the irregular and long hours in the gas station business. He was married then and wanted to be able to spend more time with his wife and children.

Lou is enthusiastic about his job and looks forward to staying in the field through retirement.

Joyce Forbes is 21 years old and a first year student at Rochester General Hospital. She is from the country of Trinidad, and had to wait 2½ years before she could come into the United States to enter training in X-Ray Technology. She spends 5½ days each week at the hospital, 8:00 to 4:30 Monday through Friday and 8:00 to 12:00 Saturdays. Part of her day is spent

in class work with fellow students, and another part in actually taking x-rays and working with patients in the hospital.

Very early in the X-Ray training program, students are taught to do certain kinds of x-rays. As soon as they have demonstrated that they can do a particular x-ray, for instance, arm and leg bone x-rays, the students actually work in the hospital with patients who require this particular x-ray. As time goes on, students learn more complicated x-ray procedures, and are then able to practice them when needed. First year students generally spend most of the morning hours working with patients and most of the afternoon hours attending classes. All of the x-rays taken by students are checked immediately, and continuing correction is provided for their best training.

The subjects which a student Technologist takes usually include

radiation protection, anatomy, (a study of bone structure) physiology, (a study of body functions) physics, dark room chemistry, principles of radiographic exposure, x-ray therapy, radiographic positioning, medical ethics, department administration, record keeping and the operation and maintenance of x-ray equipment.

Joyce enjoys working as a professional in training, and enjoys the confidence which comes with learning each new x-ray procedure. She lives in an apartment with two roommates and spends much of her time after 4:30 in studying for her academic courses. She spends her share of time clowning, relaxing, sometimes playing the guitar, and sometimes just talking with friends.

In the future, Joyce would like to become an X-Ray Therapist. She feels very strongly that she would like to be able to help extend the lives of many people suffering from diseases which

can be helped with radiation.

She will probably continue to work in a hospital setting.

Training to be an X-Ray Technologist generally requires a high school diploma, or its equivalent. The American Society of Radiologic Technologists says that, "experience has shown that mathematics and science courses, especially physics, chemistry and biology are helpful for a career in X-Ray Technology."

You can obtain more information from school guidance offices, nearby hospitals, or by writing to the Council on Medical Education, American Medical Association, 535 North Dearborn Street, Chicago, Illinois, or by writing to the American Society of Radiologic Technologists, 537 South Main Street, Fon du Lac, Wisconsin, 54935.

If you would like to know more, take action now.

# Appendix H

ROCHESTER CAREER GUIDANCE PROJECT

Cooperation and Consultation with the Career Week Project at Nathaniel Rochester School No. 3, City School District, Rochester, New York; Spring 1970

by

David B. Youst

No. 3 School is located in the inner city of the third ward of Rochester, New York. The building is scheduled for replacement within the next year or two, and has been converted from K-6 to a K-3 school. Extra funds have been used at the school to reduce class size (the average is now 16) and to provide many other compensatory services; for instance, each classroom has a full-time aide. The school is racially imbalanced; less than 3% of the students are white. An elementary guidance counselor has served in the building for the past five years. A Career Day program was started three years ago and continued last year.

During consultation with a staff member of the Rochester Career Guidance Project, the counselor, in analyzing the job titles which were represented by black role models in previous years, saw that the jobs tended to cluster in the services category and did not represent sufficient variety of occupational fields. An analysis of last year's program also showed that a number of speakers who had promised to appear on Career Day did not, in fact, arrive. The elementary counselor was committed to relating career guidance activities to the experiences of students in their classes. Because of this attempt to facilitate a curriculum-based program, the counselor established an Advisory Committee composed of teachers, aides, and administrators to help plan Career Day.

It was quickly decided that a more efficient program could be run over a longer period of time, producing greater flexibility in scheduling arrangements and making more efficient use of resource people. Career Day changed to Career Week.

The primary purpose of the week was defined by the committee as providing black role models with whom children (K-3) could identify. It was thought desirable to include some non-blacks, and some student role models in a variety of career fields, with women and men equally represented.

A flyer was prepared and distributed to each teacher, asking for her response (sample attached). Fifteen of eighteen teachers suggested names of suitable role models or job titles. Several of the aides, participating at this stage, seemed to feel a real sense of pride in recommending the names of successful black role models who would perhaps be visiting the school. The counselor offered administrative help and bridged the gap between teacher desires and the visitor's actual appearance. Each prospective visitor was contacted by telephone and given a chance to gracefully choose not to participate. If he was interested in participating, he was told that a letter would be coming which would confirm the time, arrangements, and give him a better idea of what he could do with the kids. The counselor prepared this letter, submitted it to the Advisory Committee, and saw to it that a confirming letter was sent to each visitor well before he was due at No. 3 School. Much of the counselor's time was taken with telephone or personal contacts to employers and other bosses whose approval was necessary to have a role model released from his job. A schedule was coordinated in the counselor's office and most visitors appeared in more than one class. The counselor greeted each visitor and introduced him to the teacher and to the class. She usually stayed with

the group for the entire process and took pictures of each person and of the children's reactions to the visitor. The goal of this activity was to produce a photo-record which would help children remember and identify with each visitor.

Several follow-up activities occurred; some teachers had students write thank-you notes; some encouraged them to gain additional information; and some developed related classroom projects. The counselor asked the kids, after a week, what they liked best, wanted to know, and wouldn't like. In general, she tried to have the students express their feelings about the visitor's job. The counselor wrote a thank-you note to each visitor and included a stamped, self-addressed return form which asked for: an evaluation; suggestions for improvement; and the future availability of each role model. In this way a list of experienced speakers was established within the school.

The dawn of the first day of Career Week a major flood occurred in the area. The resulting power and water loss closed the school for the day. Visitors who were due at school that day were easily rescheduled into other times during the week.

Because each visitor was encouraged to wear his uniform, bring his tools, or in some way to provide "hands-on" experience for kids, some very interesting experiences developed. A welder backed his truck up to the front door of the school and had the class meet on the front steps, right around his truck. They wore the welder's protective helmet and helped in some way to weld metal and deal with other aspects of his job. A secretary brought two pieces of paper with a sheet of carbon paper between for each student. Students wrote their own messages, saw how the carbon paper worked, produced a duplicate, and the secretary was able to

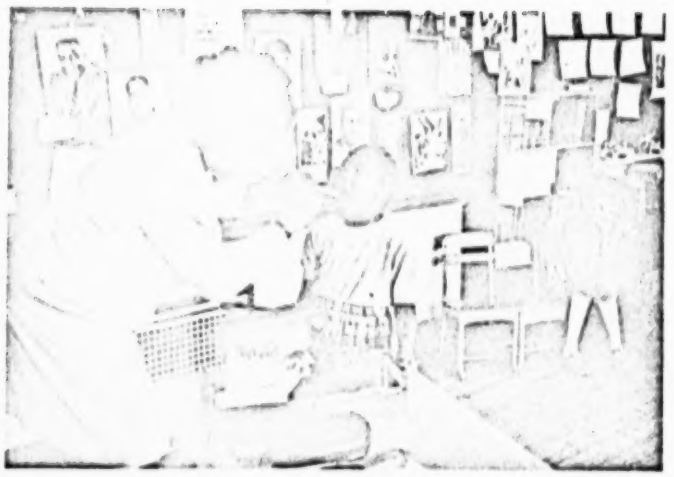
show what usually happened to the duplicate file copy. She also brought a phone message pad and other such supplies. Students were quite interested in the personal lives of their visitors, sometimes with amusing group results. One student said to the secretary, "I think you are very pretty. What do you do at night?" The student was not asking for a date, but did have real concerns in both of these personal areas. A barber brought in his tools, wore his white coat, and actually gave a haircut in the classroom. The Vice President of the Polymer Products Corporation demonstrated the chemical reactions that occur in the production of plastics and extrusion work. A photographer took pictures of the students and showed groups of black entertainers. He had the kids guessing who the entertainers were; and, as it developed through a question by the guidance counselor, who was participating in this session, the photographer had taken all the pictures which he was showing. The discussions centering around each of these activities were quite personalized, dealing with the concerns which the small groups of students had about the lives and work of the people with whom they were visiting. Follow-up sessions held by the counselor and teacher indicated some serious misunderstandings about who some of the visitors actually were. In general, these mistaken perceptions involved the role models who relied exclusively on lecturing. There was little confusion about what the welder did!

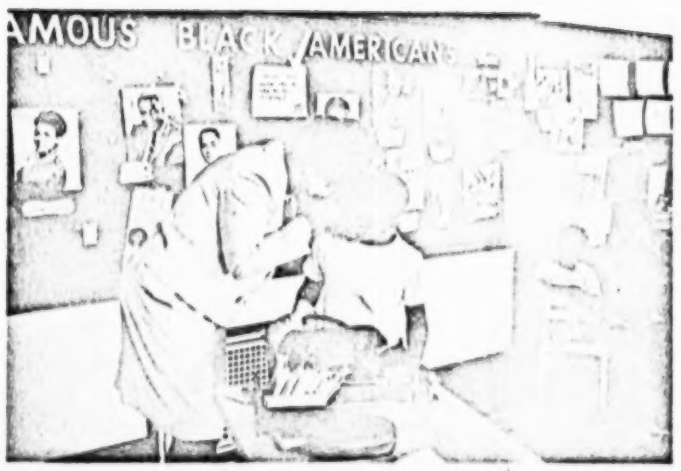
The counselor, in consultation with the staff on the Career Guidance Project, is attempting now to initiate next year's activities over a broader period of time and covering a wider range of occupations. She has started to identify black role models in a variety of occupational

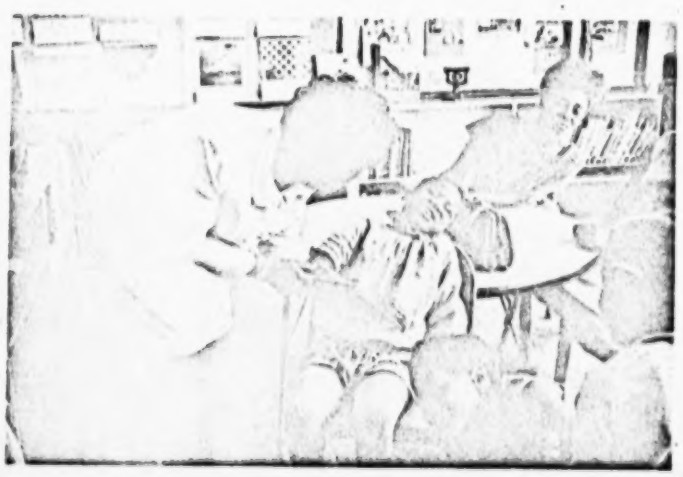
fields which have not been represented thus far. Once this type of resource list is established, it can be used as a beginning point from which the teachers can make selections across a representative range of occupational fields. Attached will be found letters used in this project and pictures taken by the counselor during Career Week. Previously she had taken only two rolls of film with this camera, an Olympus 35, automatic range finder type. Tri-X at ASA 400 was used.

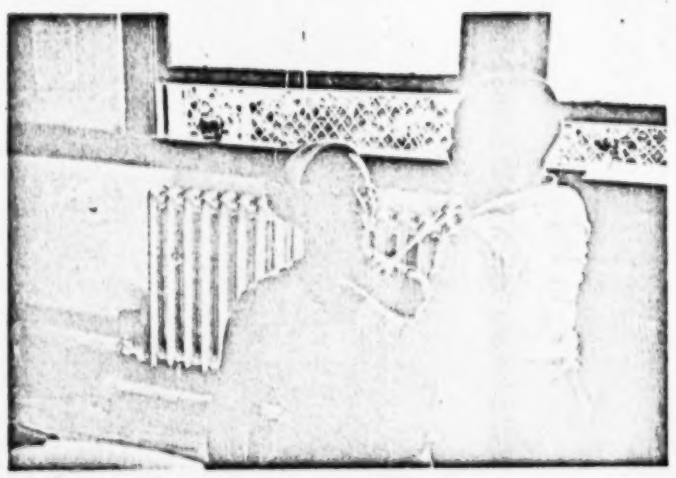
###

FLORISTS DO IT THIS WAY.

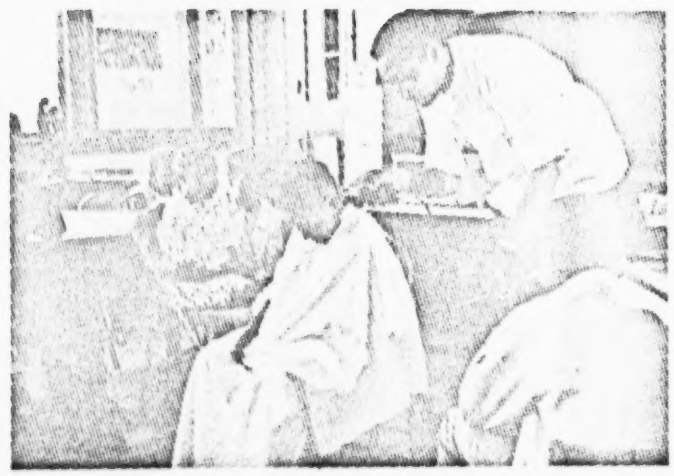




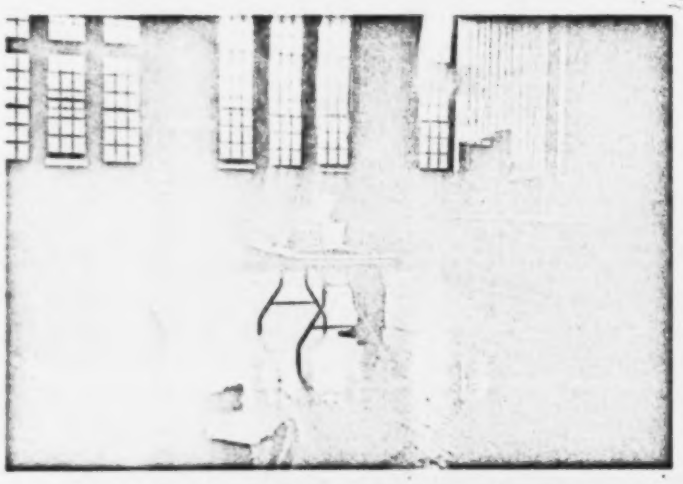


"HANDS ON" HELPS.

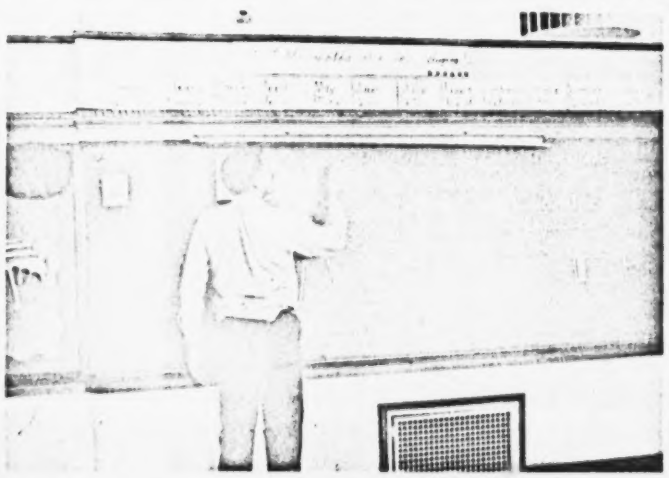


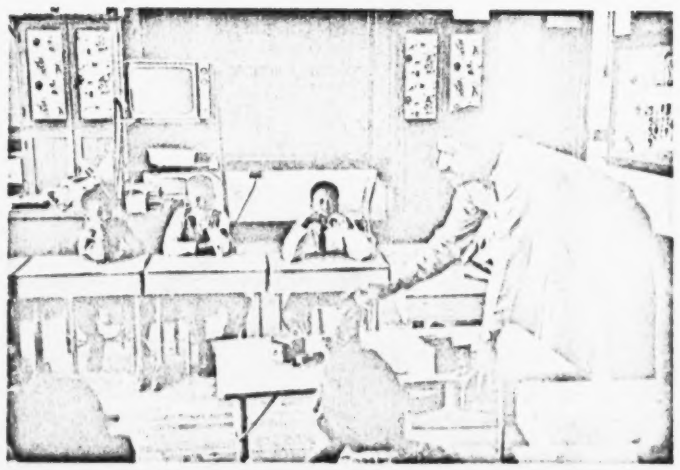
OUR HAIR

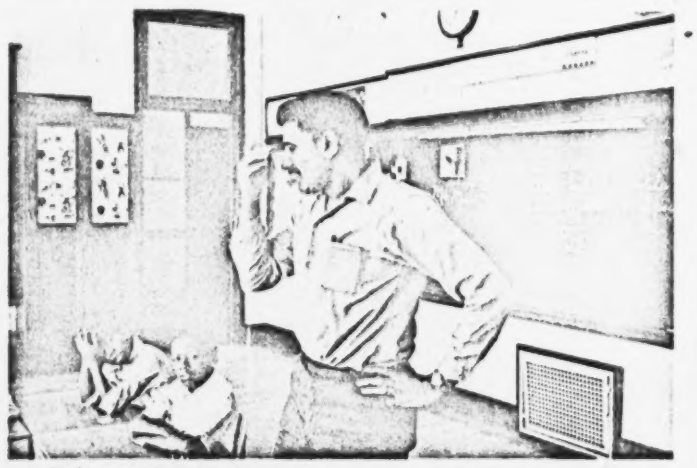
WHAT IS A ROLE MODEL?



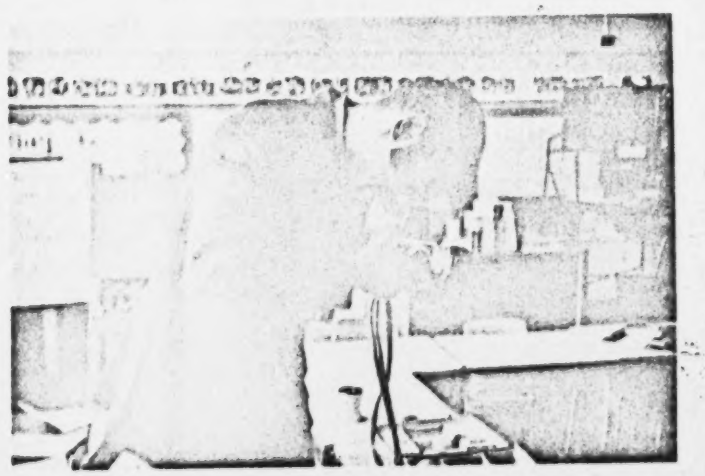
ASSEMBLIES MAY HAVE A PLACE.

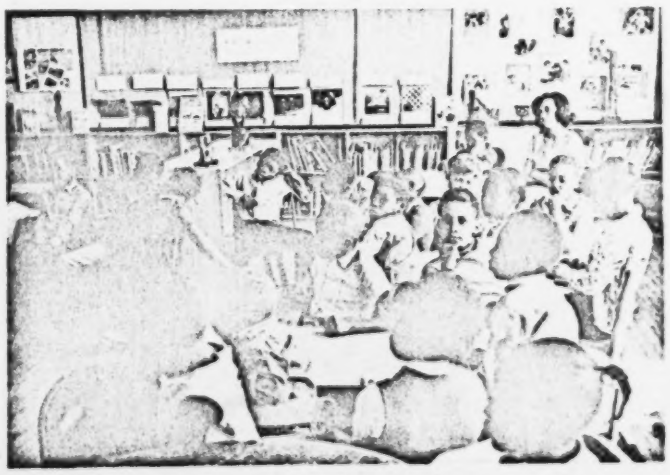






Boots





Nathaniel Rochester School #3
59 Tremont Street
Rochester, New York 14608

Dear _____,

Thank you for accepting the invitation to come to speak to some of our boys and girls. _____ will expect you on _____ at _____.

The children would like you to:

1. Wear uniform (or regular work dress).
2. Bring along some tools or materials that you use.
3. Perhaps demonstrate, involving the children if possible, one or two parts of your job.
4. Send them a picture of yourself working, if possible.
5. Be willing to answer follow-up questions that may be sent to you after your visit to the classroom.

Some of the information that we would like our students to understand about your career are:

1. Who is your employer and where is he or the company, etc. located?
2. What is the title of your job?
3. What are some of your job duties?
4. What do you like most about your job?
5. What do you like least about your job?
6. What decisions do you have to make on your job?
7. What is your history in the career?
   a. Why did you choose it?
   b. When?
   c. What education was necessary?
   d. Other jobs that you had.
   e. Etc.
8. How do you see your future in the occupation?

We have two main goals for our Career week here at School #3:

1. To help the children understand how some people function in their work roles.
2. To provide successful role models with which the children may identify.

We hope that you will enjoy the opportunity to help our children. If you have any questions or concerns, please call me at 454-3525.

Most sincerely,

Guidance Counselor

April 21, 1970

Instead of the annual Career Day, this year we will have a Career Week--the week of May 25th. You will choose careers that you want represented, perhaps correlating them with your current curriculum. We (the committee and I) will help you locate the speakers, perhaps two workers and a student in each career. Then you may prefer to contact the participants yourself, thereby scheduling them at your convenience to fit in with your school day.
We feel that the informality of this procecure will allow more flexibility and greater chance for follow-up. I have a job index in my office. Come and browse at over 500 job titles if you want some ideas.

What careers would you like represented in your room during career week?

Do you know of someone who could represent any of these careers?

Name Occupation Tel. # Address

Do you know of someone who could help us locate a speaker to represent these occupations?

Name Tel. # Address

COMMENTS:

You'll be hearing from someone on the committee.-- Thank you.

TEACHERS, AIDES, and RESOURCE STAFF:

Your Career Week Committee would like some help locating black men and women who can serve as role models for our children. Do you know workers or someone who could help us find workers to represent the following occupations? Check those that you could help us with and drop this paper in my mailbox.

Thank you.

Nancy Youst

Policeman
Fireman
Mailman
Sailor
Hairdresser
Secretary
Nurse
Construction Worker (housing project)
Doctor
Salesperson
Dance Teacher
Sports Player
Welder
Newspaperman
Mortician
Metal Worker
Baker
Gardener
Florist
Cook
Waitress
Magician
House Builder

Your name, please:

_____

May 11, 1970

Plymouth Avenue Fire Dppartment
c/o Rochester Fire Department
185 North Street
Rochester, New York 14604

Dear Sir:

Here at School #3 we will be having Career Week from May 25-29. During this time we will invite participants from different occupations to meet with class groups of our children. Acquainting them with job duties is one of the purposes behind our activities, but another very important one is providing successful black role models with which our children may identify.

The teachers will schedule meetings at the convenience of both the visitor and herself. To do this she will need names and telephone numbers.

Three classes have requested firemen. Can you help us?

Sincerely,

Nancy Youst (Mrs.)
Guidance Counselor
School Telephone: 454-3525

NY/w

## Teachers

Name

Grade

Which careers did you have represented in your room?

How do you rate them?

What has happened in class as a result of the visits?

CLASS _____

CAREER AND SPEAKER _____

1. Do you think that you have a good idea about the job from what the visitor told you?

2. Are there things about the job

   a. that you would like to do?

   b. that you would <u>not</u> like to do?

3. Did you tell

   a. anyone at home about your visitor?

   b. any friends about your visitor?

4. Would you like to know more about the job?

5. Are there other jobs you'd like to know more about?